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June 21, 2006

**REDACTED PUBLIC
VERSION**

The Honorable Joseph J. Farnan, Jr.
United States District Court
844 King Street
Wilmington, DE 19801

VIA ELECTRONIC FILING

Re: *Power Integrations, Inc. v. Fairchild Semiconductor International, Inc., et al.*,
C.A. No. 04-1371-JJF

Dear Judge Farnan:

Defendants Fairchild Semiconductor International, Inc. and Fairchild Semiconductor Corp. (collectively, "Fairchild") hereby respond to Power Integrations' first motion in limine. Generally, Fairchild agrees that an expert should not testify to opinions not found in his report. Indeed, Fairchild intends to move in limine to preclude Power Integrations' damages expert from relying upon his untimely "supplemental" report. Here, however, Power Integrations raises only two specific instances separately involving Drs. Gwozdz and Horowitz. With respect to these examples, the Court should deny Power Integrations' motion.

Dr. Gwozdz supplemented his initial report because Power Integrations withheld until after the expert report deadline highly material prior art of which both Power Integrations' attorneys and its experts were aware. *Indeed, Power Integrations and its attorneys relied upon these same references in earlier litigation before this Court to argue that the Motorola patents asserted against Power Integrations were invalid.* Power Integrations, however, failed to produce these references in the present litigation. It would be extremely unfair to reward Power Integrations' misconduct by precluding Fairchild's expert from testifying about these references.

Power Integrations' complaint about Dr. Horowitz's report is even more specious. Dr. Horowitz provided a full and complete report in a timely fashion. Indeed, Power Integrations had no complaints about the report prior to Dr. Horowitz's deposition. At his deposition, Dr. Horowitz *narrowed* (not expanded) his invalidity opinions. Power Integrations fully deposed Dr. Horowitz about these narrower opinions and, in any case, cannot be prejudiced by Dr. Horowitz's decision to remove (rather than add) reasons why Power Integrations' patents are invalid.

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A. Dr. Gwozdz Should Be Permitted To Testify About The Prior Art Withheld By Power Integrations.

Power Integrations moves to exclude paragraphs 6-8 and 34-41 of Dr. Gwozdz's Supplemental Expert Report.¹ See DI 272, p. 3. In this instance, the supplemental paragraphs are appropriate since they were necessary to address prior art improperly withheld by Power Integrations during discovery and new arguments raised during the deposition of Power Integrations' expert, Mr. Shields.

1. Power Integrations and its expert withheld highly material prior art.

In 1999, this Court, with your Honor presiding, conducted a trial between Power Integrations and Motorola. *Power Integrations v. Motorola, Inc.*, CV 98:00490-JFF. That trial included allegations by Motorola that Power Integrations' pulse width modulated (or "PWM") devices infringed Motorola's patents. The PWM devices are the same type of devices at issue in the present case. To rebut Motorola's allegations, Power Integrations retained Fish and Richardson and Mr. Blauschild, the same attorneys and expert representing Power Integrations in this case. At the direction of Fish and Richardson, Mr. Blauschild submitted a report opining that (among other issues) the Motorola patents were invalid in light of two pieces of prior art – the "Sun Thesis" and the "Wacyk Reference".² Exh. A (Blauschild Motorola Report), pp. 2-3.

From the start of this case, Fairchild served discovery requiring Power Integrations to produce (i) prior art and (ii) documents from the Motorola litigation. Exh. B (Fairchild's First Set of Req. for Prod., Nos. 12 and 81-84). The Sun Thesis and Wacyk Reference are clearly responsive to these requests. Moreover, since both references were actually relied upon by Power Integrations in the Motorola litigation, Power Integrations, its attorneys, and its expert were all clearly aware of this prior art and knew of its relevance and materiality to the field of PWM devices. Despite this, Power Integrations never produced either reference to Fairchild.

In preparing for Mr. Blauschild's deposition, Fairchild's attorneys reviewed the report Mr. Blauschild submitted in the Motorola litigation. That report referred to the Sun Thesis and Wacyk Reference. See Exh. A (Blauschild Motorola Report), pp. 2-3. Learning of these withheld references for the first time, Fairchild then located this art, provided it to Dr. Gwozdz, and produced it to Power Integrations. After reviewing the Sun Thesis and Wacyk Reference, Dr. Gwozdz agreed that the withheld art was significant and supplemented his report to address it.

¹ The parties appear to agree that the remaining paragraphs of Dr. Gwozdz's Supplemental Report are appropriate and Power Integrations has raised no objections to them.

² In his Rebuttal Report, Mr. Blauschild referred to the Wacyk Reference as "a paper from Philips presented at the 1986 ISSCC...." Exh. A (Blauschild Motorola Report), p. 2.

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It is the definition of *chutzpah* for Power Integrations first to withhold from Fairchild material prior art of which it, its attorneys, and its expert were aware and then complain that Fairchild's expert did not address these withheld materials in his initial expert report.

2. Dr. Gwozdz properly responded to arguments raised by Power Integrations' expert.

Power Integrations also accuses Dr. Gwozdz of "changing his opinion" with respect to the teachings of the Wakaumi prior art. To be clear, Dr. Gwozdz' opinions have been entirely consistent. In his initial expert report (timely filed on December 1, 2005), Dr. Gwozdz opined in great detail that the Wakaumi reference rendered obvious the asserted claims. *See* Exh. C (Initial Gwozdz Report), ¶¶ 29, 32-33, 50, 52-56, 80, and the charts attached as Exhibit F of that report. Thus, there is no dispute that Dr. Gwozdz fully and timely disclosed his opinion that the claims of the '075 patent are invalid in light of Wakaumi.

The Wakaumi prior art reference is very relevant to the '075 Patent. Power Integrations has produced what it claims to be notes from Dr. Eklund concerning his conception of the '075 Patent. In those notes, Dr. Eklund specifically identifies the same Wakaumi reference and describes it as a "**DMOS** lateral transistor in combination with CMOS logic" – precisely what is claimed in claim 5 of the '075 Patent. (emphasis added). This is significant because it shows that Dr. Eklund (the named inventor of the '075 Patent) understood that the Wakaumi reference referred to a DMOS device even though that reference did not use the term "DMOS". Despite this, Dr. Eklund did not disclose the Wakaumi reference to the Patent Office during the prosecution of the '075 Patent.

On February 16, 2006 (two and a half months after Fairchild's initial expert report was served), Fairchild deposed Power Integrations' expert, Michael Shields. Dr. Gwozdz attended that deposition. During his deposition, Mr. Shields was questioned about Dr. Eklund's characterization of the Wakaumi device as a "DMOS" device and opined (for the first time) that Dr. Eklund was "wrong" when he admitted that the Wakaumi reference disclosed a "DMOS lateral transistor in combination with CMOS logic". Exh. D (Shields Depo.) 171:13-173:1. This opinion was not set forth in Mr. Shield's report; instead, he claimed that "to be honest with you, I'd never noticed that before." *Id.* (Shields Depo.) 172:23-173:1.

On February 23, 2006 – a week after Mr. Shields' deposition – Dr. Gwozdz supplemented his report to rebut this new theory Mr. Shields "noticed" for the first time on February 16, 2006.

3. Dr. Gwozdz's Supplemental Report was appropriate and did not prejudice Power Integrations.

Throughout its motion, Power Integrations claims it was prejudiced because Dr. Gwozdz provided his 11 page Supplemental Report "the evening before his deposition was scheduled to take place...." DI 272, p. 1; *see also* p. 3 (Supplemental Report provided "the day before his

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deposition was to take place.”). This is simply not the case – *at Power Integrations’ request, Fairchild agreed to postpone Dr. Gwozdz’s deposition by two and a half weeks so that Power Integrations could fully depose Dr. Gwozdz about his report.* No prejudice occurred given the two and a half extra weeks afforded to review the 11 page Supplemental Report.

Contrary to Power Integrations’ brief, Dr. Gwozdz was deposed on March 14, 2006 – eighteen days after he submitted his February 23, 2006 Supplemental Report. After preparing an additional 18 days for this deposition, Power Integrations spent barely three hours to depose Dr. Gwozdz about his Initial, Rebuttal, and Supplemental Reports even though Dr. Gwozdz was available for a full day.

There is no unfair prejudice to Power Integrations in permitting Dr. Gwozdz to address (i) prior art that was improperly withheld by Power Integrations and its attorneys and (ii) new theories that Power Integrations’ expert claimed first occurred to him during his deposition. In contrast, Fairchild would be significantly and unfairly prejudiced were Dr. Gwozdz precluded from opining on these matters.

B. Dr. Horowitz’s Expert Report Fully And Timely Disclosed His Opinions.

On November 30, 2005, Dr. Horowitz timely served his expert report setting forth the bases of his opinion that the asserted claims of Power Integrations’ ‘366, ‘851, and ‘876 Patents are invalid in light of a large number of prior art references. Indeed, Dr. Horowitz devoted 117 paragraphs of his report – almost 20 typed, single spaced pages – to describe precisely how and in what combinations the prior art invalidated Power Integrations’ asserted claims. DI 273, Exh. C (Horowitz Report) ¶¶ 27-144. In addition, Dr. Horowitz also included almost 75 pages of charts graphically illustrating how the prior art invalidates the asserted claims.³ *Id.*

When it noticed Dr. Horowitz’s deposition, Power Integrations also subpoenaed all of his notes and documents. Exh. E (Horowitz Subpoena). Pursuant to that subpoena, Dr. Horowitz produced at his deposition a copy of the claim charts attached to his report on which Dr. Horowitz had handwritten some minor notes. Rather than expand or contradict his initial expert report, Dr. Horowitz’s notes, by and large, *narrowed* the scope of his opinion concerning the invalidity of the asserted claims. For instances, during his deposition Dr. Horowitz explained that he had crossed out invalidity arguments that he no longer was making.⁴ Exh. F (Horowitz Depo.) 104:12-105:10.

Dr. Horowitz also corrected a few, minor typographical errors in the claim charts. For instance, one chart referred to Power Integrations prior art SMP211 and the corresponding “PS07” schematic when, in fact, Power Integrations internal designation for its SMP211 was

³ Some of these charts were prepared by Dr. Horowitz while some were prepared by Dr. Wei, another Fairchild expert who worked with Dr. Horowitz in preparing the report.

⁴ Many of the portions of the charts “crossed out” by Dr. Horowitz related to claims that Power Integrations is no longer asserting against Fairchild.

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"PS10". See DI 273, Exh. E ("corrected" Horowitz charts, p. 1). The substance of that chart – how the SMP211 and its schematic anticipated the asserted claims – was not changed in any fashion.

Finally, in a few places, Dr. Horowitz added marginalia consistent with the opinions set forth in his report. For example, on page E-15 he added the observation that the prior art TK75001 "is monolithic" and anticipates claim 2 of the '851 Patent. This is precisely the opinion set forth in the body of Dr. Horowitz's report:

This claim [claim 2 of the '851 Patent] is *anticipated by the TK75001*, TEA1504, and TEA2262 references. Each of them includes a switch with first and second terminals, a frequency variation circuit that provides a frequency variation signal, and oscillator with a D_{MAX} signal whose frequency can be varied by the frequency variation signal, and the requisite drive signal. *Each of them is monolithic.*

DI 273, Exh. C (Horowitz Report) ¶ 106 (emphasis added).

Since Dr. Horowitz's opinions are fully and completely set forth in his expert report, the fact that he produced handwritten notes – as required by Power Integrations' subpoena – is irrelevant. Dr. Horowitz's minor changes do not alter the substance or bases of his opinions and do not provide a basis for Power Integrations to limit Dr. Horowitz's testimony.

Fairchild takes seriously its obligation to disclose the opinions of its experts and agrees that, in most cases, the parties' experts should be precluded from testifying beyond the scope of their reports. Here, however, Dr. Gwozdz's Supplemental Report was necessary to address prior art and arguments that Power Integrations and its experts had improperly withheld. Likewise, Dr. Horowitz's "corrections" were minor typographical changes or entirely consistent with the opinions set forth in the body of his report. Thus, while, as a general matter, the Court should preclude experts from testifying beyond their reports, in light of the specific examples identified by Power Integrations, Power Integrations' motion should be denied.

Respectfully,

/s/ Lauren E. Maguire

Lauren E. Maguire

LEM/dmf
Enclosure
170627.1

cc: Sean P. Hayes, Esq. (by hand; w/enc.)
G. Hopkins Guy, III, Esq. (via electronic mail; w/enc.)
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EXHIBIT A

Rebuttal Report -- Robert Blauschild

'178 Validity

Mr. Roop claims that if the term "coupled" can mean "indirect connections through intervening circuit elements," then every element of claims 1-6 of the '178 patent is disclosed in Fig. 1 of the '178 patent.

Fig. 1 of the '178 patent was identified to the patent examiner as being prior art, so the examiner would have taken that into consideration when determining if the '178 claims were patentable. Since the examiner allowed the '178 patent to issue, he understood the clear difference between prior art Figure 1 and the claimed invention. The asserted claims 1 and 4-6 of the '178 patent do not cover the prior art Fig. 1 circuit.

Claim 1 of the '178 patent describes one end of a primary winding being connected to a rectified D.C. voltage signal, with the other end of the primary winding coupled to the drain of the high voltage switching transistor. The drain of the high voltage power up transistor is described as being coupled to the drain of the high voltage switching transistor -- not coupled to the rectified D.C. voltage signal (as is shown in figure 1). It is not correct to say that the two separate ends of the primary winding are *coupled*. Electrical engineers don't consider opposite ends of a transformer primary winding to be "coupled."

Mr. Roop contends that the specification of the '178 patent does not set forth the best way of constructing the high voltage power transistor as understood by the inventor of the '178 patent at the time the patent application was filed.

The way that the high-voltage power transistor is constructed is irrelevant to the invention of the '178 patent. None of the asserted claims details any limitation on the construction of the high-voltage transistor, other than specifying drain and gate terminals. The '178 invention relates to circuitry for initialization of a switched mode power supply circuit, and is not directed towards the physics of semiconductor power devices.

In addition, Mr. Roop states that PI's internal documentation shows a two transistor structure, and also states that: *I believe that an engineer skilled in the art in 1990-92 would have understood the disclosure of the '178 patent to refer to a more expensive and difficult to design high voltage transistor such as a vertical power MOSFET.* Even though this point is irrelevant to the '178 patent, Mr. Roop is incorrect. Lateral high voltage MOSFETs were well known and used before 1990. Lateral DMOS transistor technology was developed in the early '70s, and high-voltage DMOS transistors were used in power circuits in the '80s. The basic structure of the lateral high-voltage MOSFET recommended for use in the '381 circuit was published in a 1989 patent (Eklund '075), and the basic structure used by Motorola in its MC3337X products is shown in Figure 6a of a paper from Philips presented at the 1986 ISSCC and published in the conference digest on page 17. Another high voltage DMOS transistor using an N- lightly-doped-drain extension built on a P- substrate is shown in Figure 1 of a 1978 ISSCC paper from Sharp published in the conference digest on page 224. In another paper published by Philips in the 1989 ISSCC Conference Digest (page 206), a 300V LDMOS transistor is shown and described as being a high-voltage lateral double-diffused N-channel MOS device formed out of an N-channel DMOST in cascode with a lateral N-channel JFET. Other U.S. Patents (in addition to the '075 Eklund patent) showing high-voltage lateral MOSFET construction also reveal what was known by those skilled in the art in 1990-92, including U.S. 4,918,026, U.S. 5,105,252, and U.S. 4,978,628. Motorola itself published a paper in the 1984 ISSCC Digest showing a lateral high-voltage DMOS device integrated with control circuitry.

It was well known in the art that lateral power devices were preferable to vertical power devices when the goal is to integrate the power device with other circuitry. This is because a vertical power device is restricted in how it may be used, since its drain terminal must always be connected to the device substrate. A lateral power device has no such restriction. As an example of what was known about this in the art prior to 1990, it's stated on page 163 of a February, 1982 Ph.D. Dissertation by Shi-Chung Sun that :

The LDMOS is attractive for integrated-circuit applications because all three terminals (source, gate, and drain) are located on the topside surface. The drain of the vertical devices, however is normally the substrate, and a separate diffusion is required, therefore, to make surface

contact to the substrate. This will increase either the drain resistance or chip area, which causes the vertical devices to appear less attractive in monolithic circuits. Page 171 of the dissertation points out that the LDMOS transistor is important in power-switching IC applications. The dissertation also shows lightly-doped-drain high-voltage lateral MOSFETs, and discusses how they can be modeled with an equivalent circuit of a MOSFET in series with a JFET.

Someone skilled in the art in 1990 would have known that the circuitry shown in the '178 patent could not easily be implemented using vertical power MOSFETs. Since the drain of the power switching transistor must alternate between high voltage and ground in normal operation, the substrate would also be pulled to ground if a conventional vertical MOSFET were used, causing capacitive coupling of the switching signal to many of the junctions on the chip. This coupling is reduced if a lateral power MOSFET is used.

In his report, Mr. Roop states that the term "high voltage" in claims 1-6 of the '178 patent must mean an off-line voltage of greater than 50 volts. He also makes the point that if "high voltage" does not mean "off-line" voltage on the order of 50-400V as described in the '178 patent specification, then there is no disclosure of what high voltage means, and the limits of the claims can't be determined. The '178 patent states that *off-line voltages typically may be on the order of 50-400V*. From this, Mr. Roop, neglecting the word "typically," states that high voltage "must mean greater than 50V." I believe that one skilled in the art would know that the claims of the '178 invention are not limited to the off-line example used in the '178 specification. The claims relate to any dc-dc converter application which would achieve the benefits of the '178 invention as stated in the '178 specification. It was well known in the art that, as discussed in the '178 patent specification, high-voltage pins caused problems with current creepage and ESD protection. I believe that the '178 specification therefore defines "high voltage" as any voltage high enough to cause either of the known high voltage problems. It was well known in 1990, when the '178 application was filed, that in the field of analog integrated circuits, 40V was considered high voltage. Even 20V was considered "high voltage" for a device connected to a pin, since ESD protection was problematical at that level.

'381 Validity

Motorola contends that component specifications for two Ricoh integrated circuits each reveal every element of the claims of the '381 patent. I have assumed for the purposes of this report that the Ricoh parts and written specifications are prior art to the '381 patent.

The key error in Motorola's position is that the input circuitry disclosed in the '381 patent accepts a combined input current consisting of operating current and a feedback current signal, while the Ricoh circuits are configured to accept a feedback voltage signal. The circuitry disclosed in the '381 patent allows the feedback and operating current paths to be combined. This allows for a single capacitor to minimize transient variations in PWM operating power, and also to stabilize the feedback system. Another advantage of this combination is achieved in switching supply systems using an opto-coupler to provide isolation between the input and the output circuitry. Opto-couplers are not efficiently operated when their operating current is very low. If only feedback current flows through the output of the opto-coupler, then the gain of the opto-coupler will reduce as the feedback current reduces. Gain must be increased in such a system by providing an extra current, in addition to the feedback current, to bias the opto-coupler in a more efficient region of its operating characteristic. By combining the operating current and the feedback current in a single path, the '381 circuitry automatically prevents low-current, reduced gain in the opto-coupler without extra bias current, because the PWM operating current performs the bias function. Neither of the Ricoh parts achieves these advantages. _

Electronic circuitry requires an operating bias supply voltage to be provided at a designated level for proper operation. Since the Ricoh applications rely on feeding back the output voltage to provide this bias supply voltage, the output voltage of these systems is restricted to be within the acceptable range of supply voltage for the Ricoh circuitry. This restriction on the output voltage does not exist when using the circuitry disclosed in the '381 patent. The '381 input circuitry accepts current and creates the proper operating voltage for the rest of the regulator circuit. Simply stated, the Ricoh parts require a supply voltage

to be provided, and the '381 circuitry creates its own supply voltage.

The '381 patent describes voltage regulation and input means which accept and separate two combined currents, a feedback current signal (Ifb) and internal low voltage supply current (Is). This is done with circuitry commonly called a *shunt regulator*. A shunt regulator accepts varying current at its input and maintains a relatively constant voltage at its input. In the '381 circuitry, the shunt regulator is configured to both extract the feedback current and use it to modulate the duty cycle of the switching transistor for output voltage regulation, and to provide a regulated voltage (VS) for the operation of the circuitry required to do such modulation. As stated in the patent: *As long as there is sufficient supply current being input to FB/VS, the voltage VS will be in regulation and any excess current will be shunted to ground through transistor 134. This excess current is mirrored and converted into an extracted feedback voltage (Vfb) (col. 3, line 67 - col. 4, line 4) ... The current continues to increase until an excess current through transistor 134 is sufficient to bring Vfb into the active range of the sawtooth waveform (1-2 volts) (col.4, lines 14-17) ... This sequence initiates voltage regulation in power supply 60. (col. 4, lines 18-19)*

The Ricoh applications are conventional boost regulators using integrated circuits that do not have the same voltage regulation and input means as disclosed in the '381 patent. The Ricoh integrated circuits do not have a shunt regulator at the input for regulation. The Ricoh parts require a regulated voltage to be supplied for proper operation of their internal circuitry, as opposed to the '381 circuit which derives proper operating voltage from the current supplied at its input.

Asserted claim 2 requires *a third electrical connection terminal for providing a connection to a combined source of bias supply power and a feedback current that is controlled in part by said pulse width modulated output*; Asserted claim 4 requires a terminal providing for a connection to a source of feedback current. Mr. Roop claims that a feedback current is provided by Pin 3. In Ricoh applications, the output transistor modulates inductor current, which in turn charges an output capacitor to create an output voltage. Pin 3 does not provide a feedback current. Pin 2 does not provide for a connection to either a feedback current (claim 4) or a

combined source of bias supply power and feedback current (claim 2) as required by the claims.

Asserted independent claims 2 and 4 of the '381 patent require the above described voltage regulation and input means, which are not present in the Ricoh RH5RC parts. Mr. Roop's chart states for the Ricoh RH5RC voltage regulation means that: *The output is regulated according to the feedback current received at pin 2.* This is not correct. As noted in Mr. Roop's discussion of the operation of the Ricoh RH5RC, regulation in the part is achieved by sending a signal "to clamp the inductor to ground for one cycle of its oscillator whenever the output voltage falls below the desired Vout." [emphasis added] The Ricoh RH5RC parts also lack the required '381 input means for accepting a combined feedback current and supply current. The RH5RC Application Manual is clear about this. As pointed out by Mr. Roop in his report, the RH5RC Application Manual states that "RH5RC does not have a Vdd (+power supply) terminal. The Out terminal is used as the output, + power supply, and output voltage detection terminal." [emphasis added] Mr. Roop's claim chart does not point to any feedback current signal, and only lists a "feedback signal" which must refer to the output voltage detection signal.

The Ricoh RH5RH parts don't have the third electrical connection terminal element, and Mr. Roop's claim chart is incorrect in the same way that it was with respect to the RH5RC parts.

The Ricoh RH5RH parts also lack the voltage regulation and input means required by asserted independent claims 2 and 4 of the '381 patent. Mr. Roop's discussion of the operation of the RH5RH part is clear about the type of feedback signal used to vary the RH5RH duty cycle: "The RH5RH monitors the output voltage on pin Vout and increases the fraction of each cycle in which the output transistor clamps the inductor to ground when the output falls below the desired Vout." [emphasis added] This is conventional voltage-sensing PWM control. Ignoring his own description of the operation of the parts, Mr. Roop's RH5RH claim chart repeats the same voltage regulation means and input means errors as made in his RH5RC chart.

I believe that it would not have been obvious how to implement a current feedback control system in a three terminal switching supply chip based on the Ricoh voltage feedback system.

Dependent claim 7 of the '381 patent further defines the voltage regulation means as further comprising a feedback extractor operating on the two combined currents, a VS regulator, and a switching noise filter. Mr. Roop states that the VS regulator and switching noise filter are "inherent in the structure." I don't understand what he means by this. No switching noise filters are shown in the written specifications, and none are needed, since the Ricoh parts use the filtered regulator output voltage as their feedback input. No VS regulators are shown in the written specifications, and none are needed, since a regulated supply voltage is provided externally. I also did testing (documented below) that shows that the RH5RH parts do not have an internal VS regulator.

In his RH5RC claim chart, Mr. Roop states that "the feedback extractor comprises the voltage divider that supplies an input to the Error Amp." There is no Error Amp in the RH5RC part. And instead of describing how he believes that the Ricoh RH5RH meets the requirements of claim 7, Mr. Roop mistakenly copied the claim 7 text of his RC5RC claim chart in order to fill in this missing element. The block diagram of the RH5RH shows a conventional voltage feedback PWM system which does not have a feedback extractor.

Dependent claim 8 of the '381 patent adds a high voltage startup regulator. Motorola has taken the position that a high-voltage startup regulator is inherent in the Ricoh application. Mr. Roop did not point to any specific structures inside the Ricoh chips, and in fact these parts have no startup circuitry at all. Instead, Mr. Roop has relied on the fact that the Ricoh parts have a minimum voltage required for initiation of switching, and incorrectly inferred that they must therefore have startup circuits. In order to meet all the claim requirements, he then contends that these startup circuits are high voltage startup regulators. The starting voltages on the various Ricoh part types vary from 0.9 to 1.2V. This is not high voltage. Not only are there no high voltage startup regulators in the Ricoh parts, but there are no startup circuits at all.

Dependent claim 9 of the '381 patent describes how the feedback extractor uses a shunt regulator and current mirror to produce an extracted feedback voltage. Mr. Roop does not point out any elements in the Ricoh data sheets that are part of any feedback extractor. None exist, because the Ricoh configurations are traditional voltage-feedback architectures.

These architectures do not use either a shunt regulator or a current mirror to extract the feedback signal, which is already in the form of a voltage, ready to be compared to a reference voltage to generate the signal that will vary the PWM pulse width (RH5RH) or gate an oscillator pulse (RC5RC).

I also did testing on a Ricoh part and verified that it does not have the voltage regulation and input means of the '381 patent. The OUT terminal characteristics of a Ricoh RH5RH501A were measured using both a curve-tracer and lab bench measurements.

A shunt regulator has a low input impedance, meaning that small changes in input voltage produce large changes in input current. An example of the I-V characteristic of a shunt regulator is shown in Figure 6 of the Motorola 7X data sheet. Over the range of feedback currents for which the power switch duty cycle changes (approx. 2-8mA, see Figure 5 of the Motorola data sheet), the feedback voltage varies in a small range about 8.6V. Figure 11 of the PI TOP210 data sheet also shows the characteristic of a shunt regulator. The results of my testing of the Ricoh part are shown in Appendix E of this report. The Ricoh part exhibits operating characteristics quite different from the Motorola 7X (which incorporates the '381 voltage regulation and input means). First, Ricoh has negative input impedance vs. Motorola's positive input impedance in normal operation. Such a characteristic in a shunt regulator can lead to system instability. Second, very little input current change (150nA) is required to vary the Ricoh duty cycle from minimum to maximum, since the magnitude of the Ricoh input impedance is high (unlike that of a shunt regulator). The Motorola 7X devices require approximately 6mA input current change to vary their duty cycle from minimum to maximum, since the magnitude of the Motorola input impedance is low. Third, below minimum duty cycle, the Ricoh part exhibits very large voltage swings for small changes in input current. This behavior is opposite to that of a shunt regulator, and shows that the Ricoh part, unlike the '381 circuitry, can not be current driven.

Mr. Roop contends that "to the extent that one might read the '381 patent to cover a circuit in which the feedback and power supply are merely combined on a wire outside of the chip, Figure 1 of the '178 patent reveals every element of the claims of the '381 patent." The '381 patent

requires more than merely combining feedback and power supply on a wire. First, the feedback must be current feedback, and not voltage feedback like that shown in Figure 1 of the '178 patent and the Ricoh parts. Second, the '381 also requires a voltage regulation means including an input means which separates the combined current signals. This is also not present in Figure 1 of the '178 patent or the Ricoh parts.

The patent examiner was aware of the '178 patent when he allowed the '381 patent. Like Ricoh, the '178 shows a voltage feedback PWM system. In addition, the Ricoh parts and their written specifications are no more relevant to the patentability of the '381 claims than the '178 patent.

PI Non-infringement of Motorola's '410 Patent

The '410 specification describes a leading edge blanking technique that operates by monitoring the voltage on the gate of a switching transistor, and passing a current sense signal as soon as that gate voltage rises above a predetermined threshold voltage. Col. 2, line 42 - col. 3, line 5 of the '410 patent describes how that threshold voltage is chosen to be above the Miller plateau of the switching transistor and below the maximum drive signal supplied to that transistor. Col. 2, lines 37-41 discuss why the threshold must be greater than the Miller plateau voltage. Asserted claims 2 and 5 of the '410 patent both require that the current sense signal be *passed when a drive signal to the gate electrode of the [switching] transistor exceeds a predetermined threshold voltage.*

This does not happen in the PI products, which have leading edge blanking circuits that use a fixed period timer to blank the leading edge current spike. The use of leading edge blanking circuits using timers was well known prior to the '410 patent, and an LEB circuit using a timing circuit is discussed as prior art in the '410 specification in col. 1, lines 27-30. PI used a fixed period delay timing approach to the LEB function in their SMP260, which is prior art to the '410 patent.

The Motorola MC3337X parts also use a fixed delay period leading edge blanking scheme, and not the circuitry of the '410 patent.

The '410 LEB scheme would not work if it was implemented in the PI parts. The '410 named inventor, in an invention disclosure document (M001301), warns that *Care must be taken when MOSFET does not turn on uniformly (ie. large gate resistance). The gate voltage should be sensed at lowest potential.* The PI parts have high gate resistance, and the signal connection to the gate (for triggering the fixed period timer) is at the highest potential. This is true for all the Topswitch and Tinyswitch products. If the PI parts contained the '410 claimed invention, then they would operate properly (not current limit on leading edge transient pulses) without a fixed period timer. The results of an experiment described in a later section of this report show that this is not the case.

Topswitch and Tinyswitch products do not have an adaptive LEB response like that that would be achieved with the claimed '410 invention, and therefore will not work in applications where the fixed period timer length is insufficient.

Mr. Roop's claim charts comparing the Topswitch and Tinyswitch to the '410 claims display several technical errors and show that not all claim elements are present in the PI circuits.

In the Topswitch and Tinyswitch charts, for claim 2, Mr. Roop defines the *transmission gate means* as including both gate 24 and gate 26 from the '410 specification. The Topswitch has no gate corresponding to gate 26, and the claim chart does not specify one. The same element is missing in the Tinyswitch circuit and claim chart.

The claim 2 comparator means is listed from the '410 specification: *"LEB circuit 20 includes comparator 22 having a first input responsive to a gate drive signal and a second input responsive to an LEB threshold voltage ..."* The prosecution history of the '410 patent shows that the patent examiner allowed the asserted claims because *the prior art fails to show the circuit comprises a comparator having a first input coupled to receive a threshold voltage, a second input coupled to a drive signal which is input to a control electrode of a transistor.* The '410 patent specification explains that the predetermined threshold voltage must be

above the Miller plateau voltage and below the maximum gate drive voltage. None of the Topswitch or Tinyswitch products has such a comparator in its LEB circuit.

The Topswitch has no such two-input comparator, and the claim chart does not specify one. In the text of his report, Mr. Roop points to a single-input inverter (I6) in PI's Topswitch circuit and makes the claim that it corresponds to the comparator in the '410 patent. A comparator is a well-known, differential-input circuit block symbolically represented by a triangle with two signal inputs, as shown in Figure 2 of the '410 patent. The MC33365 schematic, at page M004945, shows the circuitry of the '410 blanking scheme, including a two-input comparator (*inv* connected to the predetermined threshold voltage at the emitter of Q25 and *non* connected to *gate*), and two transmission gates. An inverter is a well-known, single-input circuit block symbolically represented by a small triangle with a circle at its output. Inverter I6 in the Topswitch has the wrong number of inputs to meet the requirements of the '410 patent. Additionally, the single input of I6 is not responsive to the gate drive signal as required by the '410 patent.

The Tinyswitch does not have a 2-input LEB comparator as required by the *comparator means* of claim 2. Mr. Roop incorrectly points to the fixed delay current switch as this comparator means. In his Tinyswitch claim chart, Mr. Roop describes the source of PMOS transistor M2 (PI01771) as the second comparator input. Transistor M2 is part of the fixed delay LEB circuit in the Tinyswitch. Even if the source of transistor M2 were incorrectly considered to be the second comparator input, the claim requirement would still not be met, because the source of M2 is connected to the maximum power switch gate drive signal, not a predetermined threshold voltage which is less than the maximum power switch gate drive signal.

In his Tinyswitch claim chart, Mr. Roop, referring to the PI circuit, states that "The input of the control circuit is the gate of device Q1." Device Q1 is a bipolar transistor, and as such, does not have a "gate" terminal.

Claim 5 requires *passing said sensed current signal when said voltage appearing at said control electrode of the transistor exceeds said*

threshold voltage. In his chart, Mr. Roop states that "The transistor device M3 from PI01743 operates to pass the sense signal from resistor R1 when the gate voltage of transistor device M1 from PI01736 exceeds the threshold voltage." This neglects the fixed period timer. As discussed below, ICE Topswitch measurements confirm that this claim element is not met.

In his Tinyswitch chart, Mr. Roop states that "The transistor device M3 from PI01771 operates to pass the sense signal from resistors R1 and R1A when the gate voltage of transistor device M1 from PI01762 exceeds the threshold voltage." Again the fixed period timer is incorrectly neglected. The ICE measurements confirm that the sensed current signal is not passed when the control electrode voltage reaches the threshold voltage specified by Mr. Roop.

Claim 5 also requires *providing a threshold voltage that is greater than a plateau voltage of the transistor and less than a maximum voltage being applied to said control electrode of the transistor.* The Topswitch lacks a threshold voltage that is always greater than the Miller plateau voltage as required by the '410 patent. This is also confirmed by the ICE measurements.

The Tinyswitch does not have an LEB threshold voltage greater than the Miller plateau as specified by the '410 patent. As discussed below, ICE measurements confirm that the Tinyswitch lacks this claim element.

Mr. Roop's '410 Simulation Results

Mr. Roop states in his report that he prepared a computer circuit simulation of the Topswitch circuit, and that his results were consistent with ICE's test results. Mr. Roop used a different test circuit than ICE. In addition, Mr. Roop's simulation was based on faulty input data, was not representative of the performance of any Topswitch part, and was inconsistent with ICE's test results.

Without accurate AC models of the PI transistors, it wouldn't have been

possible to run an accurate transient simulation of the PI part. Mr. Roop used an IRF710 power switching transistor in his simulation instead of the power switching transistor in the PI Topswitch. The PI power switching transistor threshold voltage is approximately 1.2V, while the IRF710 discrete power MOSFET has a threshold voltage of over 3.7V. The Miller capacitance of the IRF710 is larger than that of the Topswitch power switching transistor. Because of these and other modeling errors, Mr. Roop's results show a power switch transistor gate rise-time of approximately 3usec, which is about 15 times larger than the ICE measurements. Incorrect DC and AC models for the other NMOS and PMOS transistors were also used. Mr. Roop also simulated the circuit using an incorrect supply voltage. ICE measured the Topswitch at the correct Topswitch supply voltage of 5.9V, but Mr. Roop used an 8.6V supply voltage, which would change operating conditions and also shift the simulated "LEB comparator threshold" higher. The switching point of Inverter I6 increases as the supply voltage increases. Since the Miller plateau voltage is not dependent on supply voltage, raising the supply voltage can raise the switching point of Inverter I6 (which was mistakenly identified by Mr. Roop as the '410 LEB comparator) above the Miller plateau.

ICE Test Results

In his expert report, Mr. Roop relied on testing done by ICE (Integrated Circuit Engineering). Several of the ICE measurements were done incorrectly, and as a result, have contributed to his incorrect conclusions.

ICE did transient tests while varying DC input voltage and load resistance. It is unclear which resistance was varied, since no load resistor is shown in the test circuit shown in Figure 2.

Referring to Mr. Roop's discussion of the Topswitch, it is not correct to state that the over current control circuit is enabled *once the output transistor gate voltage rises above the LEB threshold*. A 4.8V "LEB threshold" was measured with a dc (direct current) sweep of the power switch gate drive signal, and therefore delays were ignored. By ignoring delays, it is not possible to determine when, in time, the over current

control circuit is enabled. A transient test, which includes delays, shows that Mr. Roop's conclusion is wrong. V2 in Figure 6 of the ICE report is the signal which enables the passing of the current sense signal, and as seen in transient plots in Figures 16 and 17, V2 does not rise until well after the gate voltage has risen above 4.8V. In fact, V2 does not rise until the gate voltage has been driven to its maximum drive level.

The conclusion that the PI Topswitch has a fixed "short delay," "superfluous to the LEB function" is also incorrect. Two points in the circuit were measured for each operating condition. V1 is the signal one inverter before the timer, and V2 is the signal one inverter after the timer. A delay measurement with respect to V1 was taken by looking at the time from the start of the power switch drive signal rise until after the signal at V1 had finished its transition. A delay measurement with respect to V2 was taken by looking at the time from the start of the power switch drive signal rise until before the signal at V2 had started its transition. By incorrectly measuring the V1 delay long and the V2 delay short, the difference between the two due to the timer is incorrectly minimized.

The ICE Tinyswitch measurements were also faulty. Again, delay to the transmission gate was measured at a point before the gate had been driven high enough for turn-on.

PMOS threshold voltage was measured to be negative 2.4V. Since the maximum PMOS threshold voltage in the PI fabrication process is -1.3V, either this measurement was done incorrectly and/or the measured part was bad. ICE's other threshold voltage measurements were also done incorrectly.

ICE's measurement and Mr. Roop's conclusion that the LEB threshold is 4.4V is inconsistent with simple hand calculations for the voltage at which the timer starts (especially if one starts with a PMOS threshold voltage of negative 2.4V). The ENABLE pin was held low for this measurement, and ICE stated that forcing a high signal on the ENABLE pin resulted in *a low resistance path to ground which did not allow continued measurements without damaging the device*. This is inconsistent with normal operation of the Tinyswitch. Additionally, since ICE reportedly

disconnected the gate of the power switch from its drive circuitry, there should only have been high-impedance from the gate to ground, independent of the state of the enable pin.

Even if one was to accept ICE's measurements, those measurements show that the circuitry in the Tynswitch does not use the '410 claimed invention. ICE reported a measured Tynswitch Miller plateau voltage varying between 3.42V and 5.1V, depending on loading conditions. The '410 patent requires that the "predetermined threshold voltage" for the Tynswitch must be greater than 5.1V and less than the maximum gate drive signal. ICE reported a measured LEB threshold of 4.4V. Figure 18 of the ICE report shows that the current sense signal is not passed when the power switch gate drive signal reaches 4.4V. Instead, it shows that the signal is passed well after this gate drive level is reached. It also shows that the signal is passed when the gate drive signal is at its maximum level, not less, in direct contradiction to what is required by the '410 patent.

My testing of a Tynswitch (TNY253) showed that the threshold of the fixed period timer was below the Miller plateau voltage, and that the fixed period timer performed the LEB function.

My testing of a Topswitch (TOP210) showed that the delay from the start of the timer until the current sense signal was enabled was 140ns when tested with a DC input voltage of 340V and a load capacitance of 68pF. The specified nominal LEB time for the TOP210 is 180nsec. The waveforms also show that the leading edge spike is still present after the OUT_4V signal has risen. Since the "comparator" has triggered at the start of the Miller plateau region, the '410 threshold requirement is not met, and were it not for the fixed period timer, leading edge blanking would not occur. Testing was also done at a DC input voltage of 100V with no load capacitance. This shows that the "comparator" triggers when the gate drive voltage is 4.8V, above a 3V Miller plateau. As with ICE's DC measurement of "comparator" threshold, this measurement was done under conditions which do not result in a leading edge spike. The results of my Topswitch and Tynswitch testing are documented in Appendix D of this report.

As a further test of Mr. Roop's statement that the Topswitch fixed delay "is insubstantial and has little or no actual effect on the operation of the circuitry," I tested an actual Topswitch part in a regulator application. Appendix C of this report documents the results of that test in which the drain current of the Topswitch power MOSFET was measured as a function of regulator loading. As the regulator load was decreased from 90 to 10 Ohms, the leading edge current pulse was observed to vary from 520mA to 840mA. Since the current limit for this part (TOP223) is 750mA, the leading edge current pulse was high enough to trigger current limit if it hadn't been blanked. After confirming that the part did not go into current limit, even at spike amplitudes above 750mA, the part was removed from the board and a laser was used to cut the capacitor out of the LEB fixed delay timing circuit, effectively removing the fixed delay from the part. The measurements were then repeated, and it was found that the part went into current limit for load resistors that caused the leading edge spike to rise above 750mA. This confirms that the fixed delay circuit was not only substantial, but that it is a necessary, key element in performing the LEB function.

PI Non-infringement of Motorola's '926 Patent

The '926 patent describes a circuit that generates a reference current by reflecting the base-emitter voltage V_{be} of a transistor across a resistor R , so that the reference current is proportional to $(V_{be} + \Delta V_{gs})/R$. The reference current generated in the accused PI parts is not proportional to $(V_{be} + \Delta V_{gs})/R$, but instead is proportional to $\Delta V_{be}/R$, as admitted in Motorola's claim chart for their '367 patent. A reference depending on ΔV_{be} is different than a reference depending on V_{be} , as stated in col. 1 of the '367 specification.

V_{be} is a much larger voltage than ΔV_{be} , necessitating the use of a much larger resistor for a given reference current. This is also the reason that reference circuits depending on V_{be} like the one shown in the '926 patent are less sensitive to component mismatches than ΔV_{be} reference circuits. V_{be} varies negatively with increasing operating temperature, while ΔV_{be} varies positively with increasing operating

temperature.

The only independent claim of the '926 patent, claim 1, requires a reference voltage means consisting of two diode-connected transistors in series, one bipolar and one MOS. The PI reference current circuits have a reference voltage means consisting of only a single diode connected bipolar transistor. In his claim chart, Mr. Roop lists the description of the first diode-connected device in the '926 specification: *"In the reference voltage portion 12, an NPN bipolar transistor 20 has the base and collector thereof connected to a positive supply VDD..."* The current reference circuit in the accused PI parts has no such connected bipolar transistor, and the claim chart does not list a correspondingly connected device. Also missing from the PI parts and the claim chart is a bipolar transistor with *the emitter thereof connected to the source of a P-channel MOS transistor ...* Bipolar transistor Q1S1X is not equivalent to diode connected transistor 20 in the '926 patent, because Q1S1X is an open collector bipolar device that is significantly more difficult to fabricate using conventional MOS IC fabrication processes. Bipolar transistor Q1S1X is not equivalent to the series combination of transistors 20 and 22 in the '926 patent.

The '926 specification states that *a reference voltage with respect to the positive supply VDD will be developed on the gate of the transistor 22 ...* Referring to the PI circuit, Mr. Roop states that *A reference voltage is provided by the reference voltage means at the gate of transistor device MN1NF.* This is not correct. If there is a reference voltage in the PI circuit, it would be at the base of bipolar transistor Q1S1X. The reference voltage means in the PI circuit is not equivalent to the reference voltage means of the '926 patent, since it results in a significantly different reference voltage, leading to different circuit performance as will be explained below.

Claim 1 of the '926 patent also requires a reference current means consisting of an MOS transistor connected to a supply voltage via a resistor so that *the base-emitter voltage V_{be} of the transistor 20 will be reflected across the resistor 26. The reference current portion 14 will therefore provide a reference current which is proportional to the reference voltage provided by the reference voltage portion 12.* (Col.2, lines 25-30) The PI reference current circuits do not have a

configuration that reflects a V_{be} across a resistor, or a reference current that is proportional to a reference voltage created by two diode-connected transistors, or an MOS transistor with its source connected to a supply voltage via a resistor. In his claim chart, Mr. Roop does not list the reference current means from the '926 specification, but instead repeats the part of the specification discussing the reference voltage means. And while the reference current means disclosed in the specification consists of two elements, Mr. Roop points to a three element combination in the PI circuit.

The three element PI combination is not equivalent to the two element claim requirement. The PI circuit is built in a BICMOS technology, and therefore does not have the restriction discussed in the '926 specification of only having the availability of bipolar transistors with their collectors connected to a supply rail. The PI circuit uses a well-known prior art circuit like that shown in Gray and Meyer Figure 4.25a, with the addition of MOS cascode transistors. The PI circuit reference voltage means and reference current means result in a delta- V_{be} reference current circuit, which has a different design equation, a different temperature performance, and a different tolerance to component variations than the circuitry shown in the '926 patent.

As stated above, the MOS transistors Mr. Roop incorrectly identifies as being part of the PI reference voltage and current means are merely performing a cascode function in the PI circuit, and have nothing to do with the reference voltage and current means. If Mr. Roop were to point to the actual reference voltage and reference current means used in the PI circuit, then his claim chart would also cover the prior art (as it did in his '367 claim chart -- see below)

An important feature of the reference voltage and current means of the '926 patent is that the channel width to length ratios of MOS transistors 22 and 24 match. *By constructing the transistor 24 to have the same ratio of channel width to channel length as the transistor 22 and thus the same current density, the gate to source voltage V_{gs} of the transistor 24 will be substantially the same as that of the transistor 22. Thus, the base-emitter voltage V_{be} of transistor 20 will be reflected across the resistor 26.* (col.2, lines 21-27) This matching of current densities is crucial to the claimed invention, and was used by Motorola in the prosecution history to

distinguish their circuit over the prior art found by the patent examiner. (page 3 of their 12 January, 1982 response) The two MOS transistors that Motorola points to in the PI circuits as the equivalents of '926 transistors 22 and 24 do not operate at equal current densities.

As opposed to the circuit of the '926 patent, the PI current reference circuit configuration benefits from the intentional W/L mismatch between MN1NF and MN2NF. By choosing a larger geometry for MN2NF, the collector voltage of Q2S8X is raised with respect to the collector voltage of Q1S1X. This gives more margin against saturating Q2S8X and better matches the Vce's of the two bipolar devices.

Dependent claim 2 of the '926 patent adds that the second diode-connected transistor is an MOS transistor with the reference voltage developed on its gate. The reference voltage in the PI circuits is not on the gate of a MOS transistor, but instead on the base of a bipolar transistor. The reference voltage is incorrectly specified as being on the gate of MN1NF in the claim chart.

Dependent claim 3 of the '926 patent adds that *the reference current means comprises a resistor connected in series with an MOS transistor having the reference voltage coupled to the gate thereof*. The PI reference current circuits have a resistor connected in series with a bipolar transistor, which doesn't have a gate to connect any reference voltage to. Mr. Roop did not mention the bipolar transistor in his chart, and again incorrectly identified the reference as being on the gate of MN1NF.

Dependent claims 4-7 of the '926 patent describe conventional, well known current mirror circuitry of the type used by PI and most other CMOS analog circuit product vendors, both before and after the advent of the '926 patent.

Mr. Roop's '926 Simulation Results

Mr. Roop ran simulations of the SMP and the '926 bias current reference circuits (M025731-2 and M025735-6) which show each of these circuits producing a current of approximately 25uA. In order to get these currents to match, however, the current setting resistor in the '926 circuit had to be

increased by over an order of magnitude (confirming what I discussed above about V_{be}/R current reference circuits). The '926 circuit was also simulated with a different supply voltage than that used in the SMP circuit.

Appendix A of this report shows the results of simulations I ran comparing the SMP and '926 circuits, using model parameters extracted from the ICE measurements. The simulated current flowing in the '926 circuit was found to be over 13 times larger than the simulated current flowing in the SMP circuit. Changing the current setting resistor from 2.138k to 24k (as Mr. Roop did in his simulation) will result in approximately the same nominal current for the SMP and modified '926 circuits, but even then the circuit behavior is quite different, due to the fundamental differences between a delta- V_{be} circuit (SMP) and a circuit that has a V_{be}/R dependency ('926) as discussed above. Appendix A also shows how the current flowing in each circuit varies with operating temperature. Note that while changing the '926 resistor value by an order of magnitude can be done to match the currents around room temperature, the SMP circuit current stays nearly constant (slightly increasing with increasing temperature), while the '926 current decreases sharply with increasing temperature. The '926 circuitry was also modified by changing polarity (inverting), and by replacing the '926 current mirror with a cascoded current mirror like that used in the PI circuit. I also used an NPN diode-connected transistor in place of the PNP transistor that would be required in the inverted '926 circuit to make the circuits more closely match in topology. Even with these changes, the simulated current flowing in the '926 circuit was found to be over ten times larger than the simulated current flowing in the SMP circuit. These simulations were run at a supply voltage of 8.6V instead of the 5.9V normally used by the SMP circuit. This was done to match the drain-source voltages of the '926 circuit, since it does not have a cascode and therefore has a stronger VDD dependency than the SMP circuit. This is shown in Appendix A with a VCC sweep simulation with the SMP resistor held at 2.138k and the '926 resistor changed to 26.5k (to more closely match the nominal currents in the two different circuits).

Summarizing, because of fundamental architectural differences, the reference currents generated with the '926 circuitry and the PI circuitry

exhibit different performance over temperature, different sensitivity to component tolerances, and different design equations.

PI Non-infringement of Motorola's '367 Patent

Like the circuit of the '926 patent, the circuit described in the '367 patent also depends on matching current densities in two MOS transistors for proper operation of the reference voltage means and reference current means of claim 1. *Transistor 28 is constructed with a channel width to channel length ratio such that transistors 22 and 28 have the same current density.* (col. 2, lines 26-28). This is even more important in a circuit using delta-V_{be} as part of its current-setting voltage, since any mismatch in V_{gs} of the two devices would be a larger percentage of the total voltage reflected across the reference resistor. There are no correspondingly matched MOS transistors in the PI circuits. As discussed above with respect to the '926 patent, MN1NF and MN2NF in the SMP circuits are intentionally mismatched in current density by a factor of two for better performance.

The Widlar current source used in the PI circuits (Q1S1X, Q2S8X, and R2L37p5) is identical to those used in well known analog circuits dating back into the 1960's. One such circuit is shown in the 1977 Edition of Gray and Meyer (Fig. 4.5 and Fig. 4.25b). One could consider Q1S1X to be a reference voltage means, and the combination of Q2S8X and R2L37p5 to be a reference current means, but the combination is still a prior art configuration.

In the '367 patent specification, *a reference voltage ... is developed on the gate of transistor 22.* In his claim chart, Mr. Roop adds that transistor 22 is an "NPN bipolar." This is not correct, since transistor 22 is a PMOS device. Referring to the PI circuit, Mr. Roop states that "A reference voltage is provided by the reference voltage means at the gate of the first bipolar transistor device Q1S1X." Since Q1S1X is a bipolar device, it does not have a "gate."

The '367 patent specification describes the reference current means as follows: *In reference current portion 14, an NPN bipolar transistor 24 has the base and collector thereof connected to positive supply voltage, VDD, and the emitter thereof connected to a first terminal of a resistor 26. A second terminal of resistor 26 is connected to the source of a P-channel MOS transistor 28 ...* The second part of the reference current means (*A second terminal of resistor 26 is connected to the source of a P-channel MOS transistor 28*) is not listed under the '367 specification section of Mr. Roop's claim chart. The PI circuit has no such connection, and none is specified in the claim chart. Instead, Mr. Roop describes the components in the PI circuit corresponding to many prior art circuits, one of which is shown in Gray and Meyer Figure 4.25a. The PI circuits also lack the required bipolar transistor having its base and collector connected to a supply voltage. As discussed above with respect to the '926 patent, the PI circuit is built in a BICMOS technology, and therefore does not have the restriction discussed in the '926 specification of only having the availability of bipolar transistors with their collectors connected to a supply rail.

Dependent claim 2 of the '367 patent adds that the reference voltage means is a bipolar diode-connected transistor in series with a diode-connected MOS transistor with the reference voltage developed on its gate. The reference voltage in the PI circuits is not on the gate of a MOS transistor, but instead on the base of a bipolar transistor. In his claim chart, Mr. Roop states that the reference voltage in the PI circuit is on the gate of MOS transistor MN1NF, contradicting his statement with respect to claim 1 that the reference voltage is on the gate of bipolar device Q1SIX.

Dependent claims 4-7 of the '367 patent describe conventional, well known current mirror circuitry of the type used by PI and most other CMOS analog circuit product vendors, both before and after the advent of the '367 patent.

As stated above with respect to his claim chart, Mr. Roop, in his analysis, only describes a part of the reference current means of the '367 circuit, and leaves out the parts of the '367 reference current means that are not present in the PI circuit (a bipolar transistor with its base and collector connected to a supply voltage, and an MOS transistor with its source

connected to a resistor). He also states that any differences between the accused PI circuit and the '367 circuitry are insubstantial design choices. I believe that one skilled in the art would know that these are not "insubstantial design choices," and that the PI and '367 circuits have different topologies with different design equations and different performance.

As stated above, the PI circuit uses a well-known prior art topology for its reference voltage and reference current means. The MOS transistors referred to by Mr. Roop when discussing these means are merely added as a cascode, and are not connected in the same way as required by the '367 patent.

Mr. Roop's '367 Simulation Results

Mr. Roop has done circuit simulations that show that the operating current in the SMP bias current reference circuit does not vary substantially with operating temperature (M025725-27). He also did circuit simulations that show that the operating current is insensitive to mismatch in the W/L ratios of MN1NF and MN2NF. His simulated results (M025722-24) show that changing MN2NF to be 50u/10u (to match MN1NF as required by the '367 patent) produces the same results as with the SMP circuit in which there is a 2:1 W/L ratio. I agree with these basic fundamental results, although the simulations were run at the wrong supply voltage with models not representative of any SMP part. This type of temperature performance is typical of circuits such as the SMP reference current circuit and the reference current circuit shown in Figure 4.25a of Gray and Meyer when using a current setting resistor with a positive temperature coefficient. Insensitivity to MOSFET matching is due to the fact that the MOSFETs are performing only a cascoding function, and are not part of the reference voltage and current means. Mr. Roop would have found quite different results, however, if he did the same tests with the '367 circuitry.

Mr. Roop also did circuit simulations that show that the SMP circuit and the '367 circuit produce the same operating current when the same current setting resistor is used in both circuits (M025731-34). It is important to note that in order to get the operating currents to match, Mr. Roop used

different geometries for MN2NF (in the SMP) and M28 (in the '367). The currents would not have matched if he did a comparison using the SMP geometry in the '367 circuit.

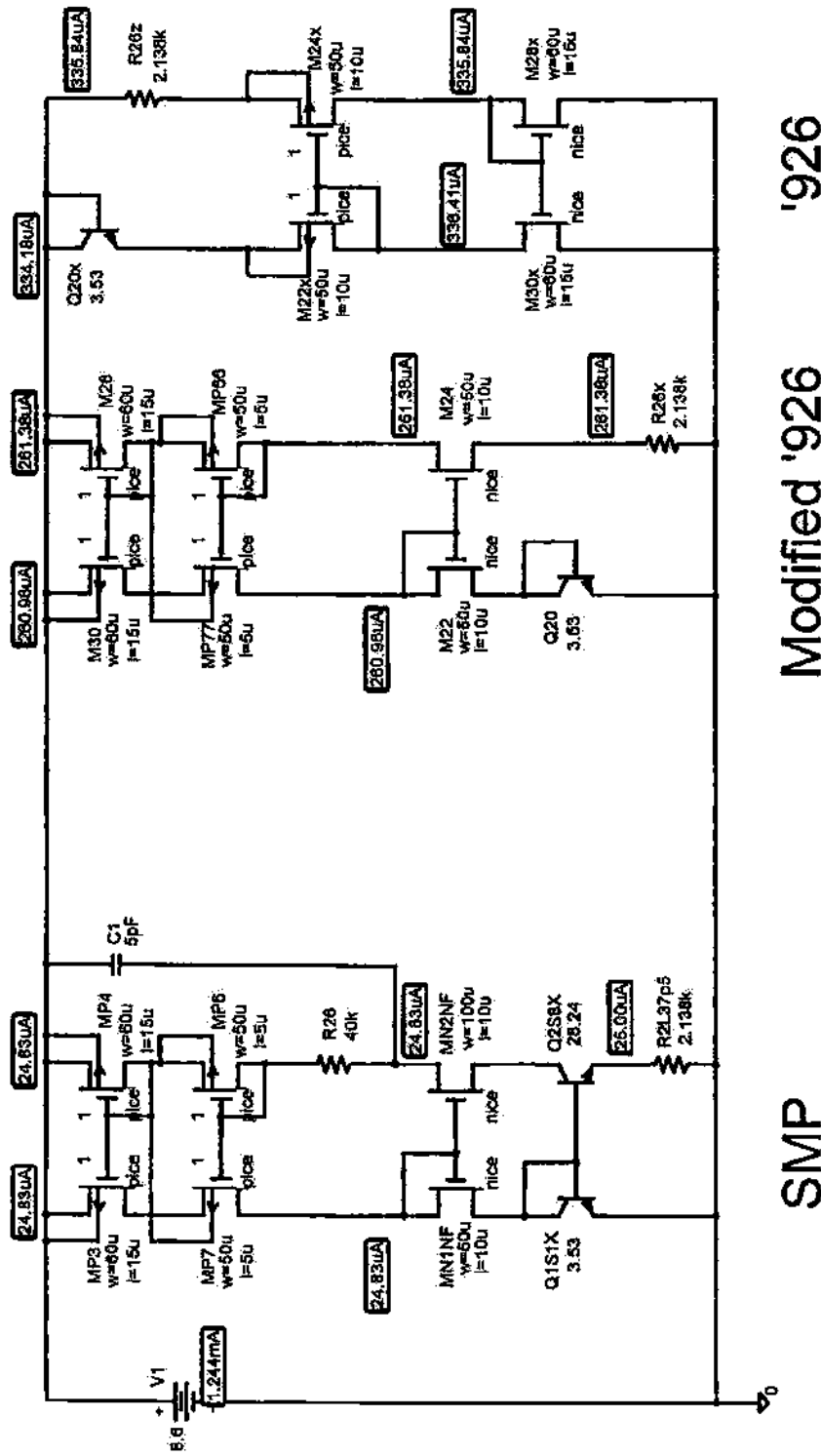
Appendix B of this report shows the results of circuit simulations I did to compare the performance of the SMP bias current reference circuit and the '367 circuitry. Four bias current reference circuits were compared: 1) SMP, 2) SMP modified with MN2NF changed from 100u/10u to 50u/10u to match MN1NF, 3) the '367 circuit with M28 and M22 mismatched, and 4) the '367 circuit with M22 and M28 matched as required by the patent. The results confirm that the SMP circuit is insensitive to MOSFET mismatch, while the '367 circuit is very sensitive to MOSFET mismatch. The current in the '367 circuit jumps up by more than a factor of 8 when the MOSFETs W/L's are mismatched by a factor of two. Even more striking is the difference that this mismatch causes in performance over temperature. In addition to the large increase in room-temperature current, the '367 circuit demonstrates a large negative temperature coefficient when M22 and M28 are mismatched in current density by a factor of two. This demonstrates why the '367 patent requires M22 and M28 to be matched. The simulation confirms that the SMP circuit does not exhibit this type of sensitivity to MOSFET mismatch. This is because the SMP circuit uses different reference voltage and current means than the '367 circuit. As discussed above, transistors MN1NF and MN2NF are used as cascode devices in the SMP circuit. The improved supply rejection performance of the SMP circuit over that of the '367 circuit is also shown in Appendix B.



Robert Blauschild

A

SMP -- '926 COMPARISON



Inverted
Improved PMOS Mirror
Free Collector NPN diode-
connected transistor
used instead of
substrate PNP

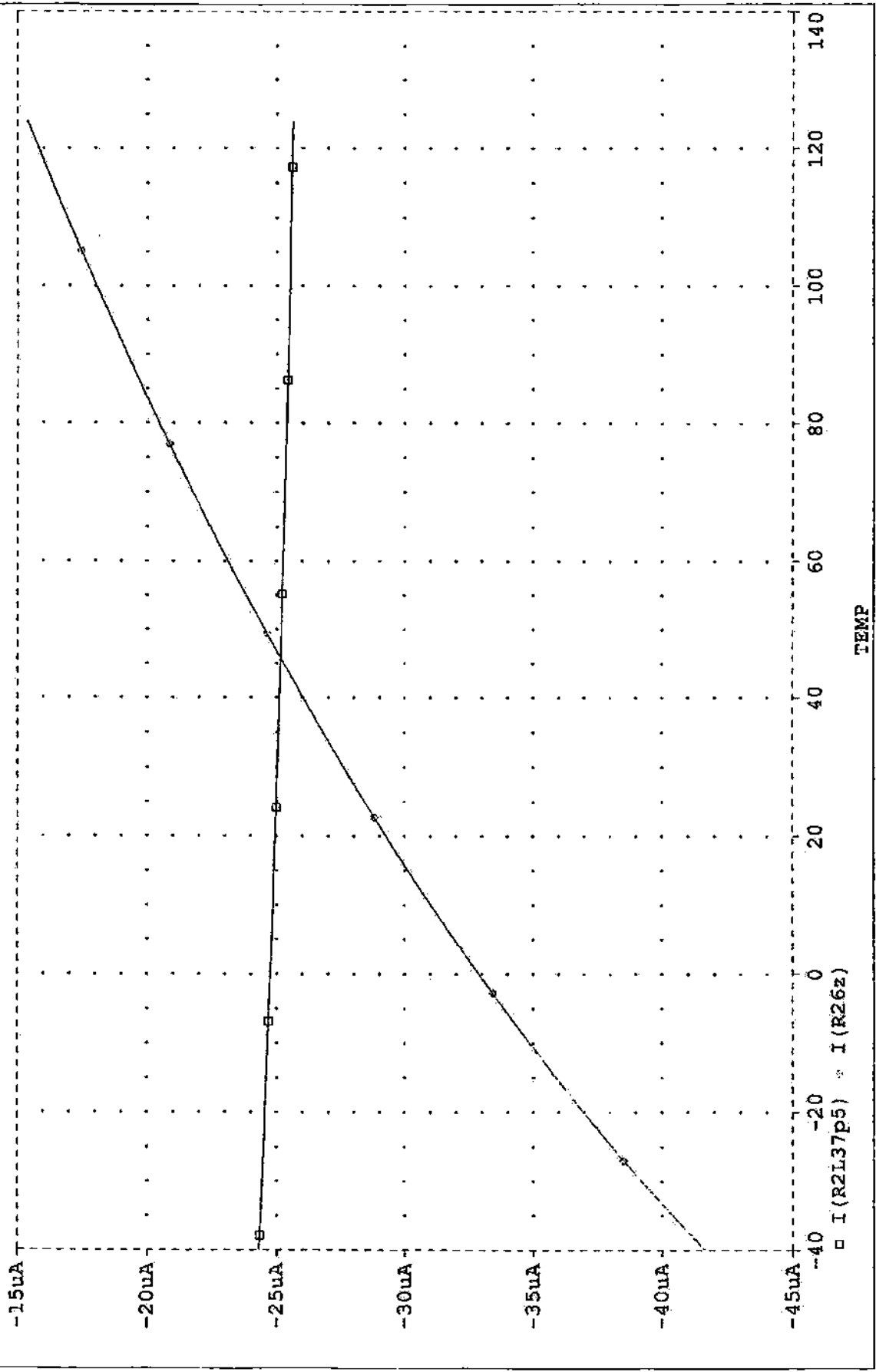
'926 HAS OVER 10X THE SMP
CURRENT FOR AN EQUAL VALUE
CURRENT-SETTING RESISTOR

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Temperature: -40.0

(A) Reference Current Temperature Drift



Date: August 11, 1999

Page 1

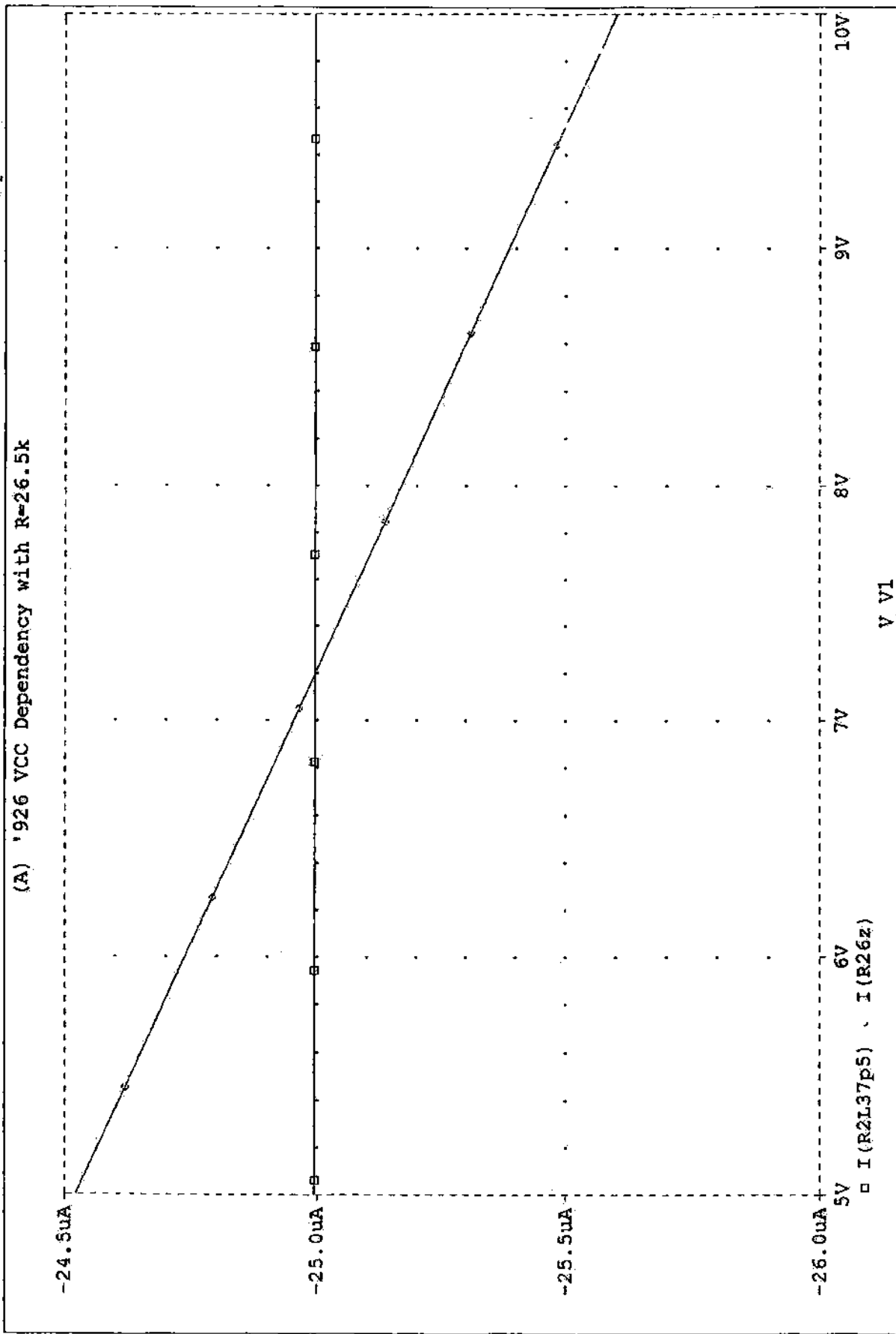
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Temperature: 27.0

(A) '926 VCC Dependency with R=26.5k



Date: August 12, 1999

Page 1

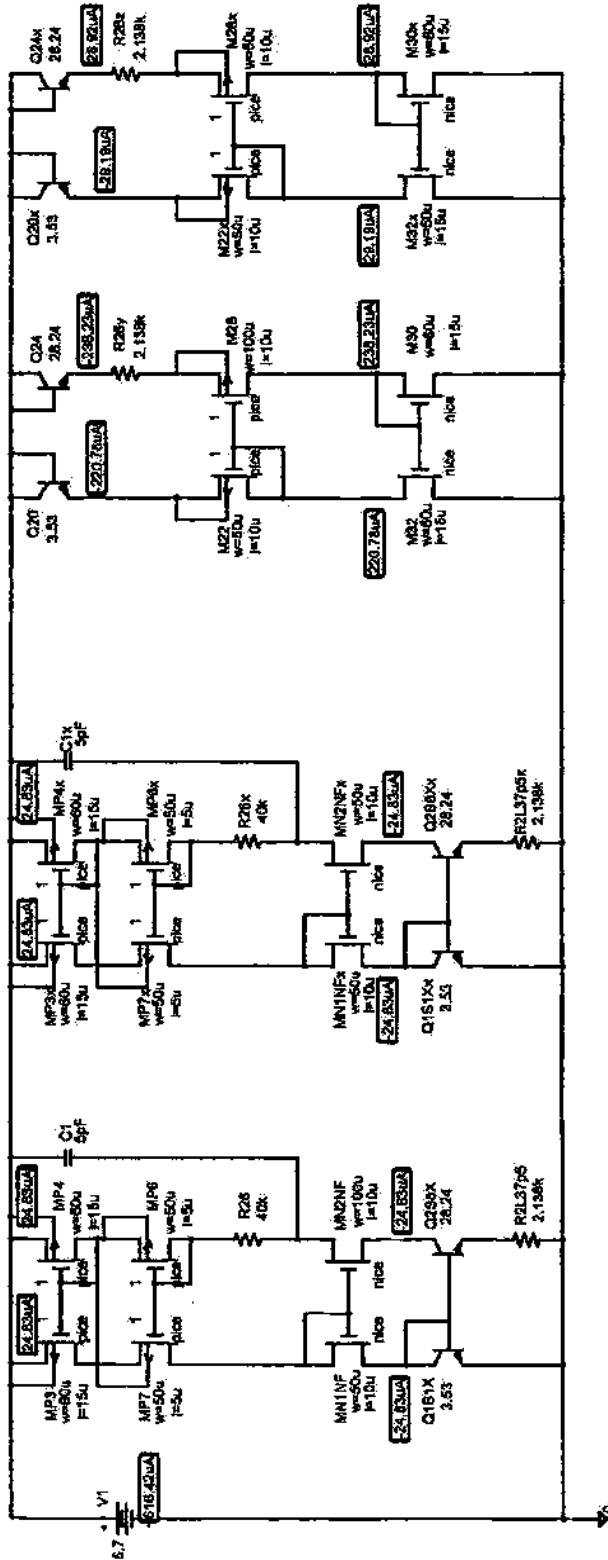
Time: 05:57:07

B

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SMP -- '367 COMPARISON



SMP	Modified '367	'367
MN1NF and MN2NF Mismatched as in SMP parts	M22 and M28 Mismatched	M22 and M28 Matched

SMP IMMUNE TO CASCODE MISMATCH

'367 MUST HAVE M22-M28 MATCHED

'367 MODIFIED WITH MISMATCH LIKE IN SMP HAS OVER 8X CURRENT

MicroSim Corporation
20 Fairwinds
Irvine, CA 92718
714-770-3022

Revision: - January 1, 2000

4

3

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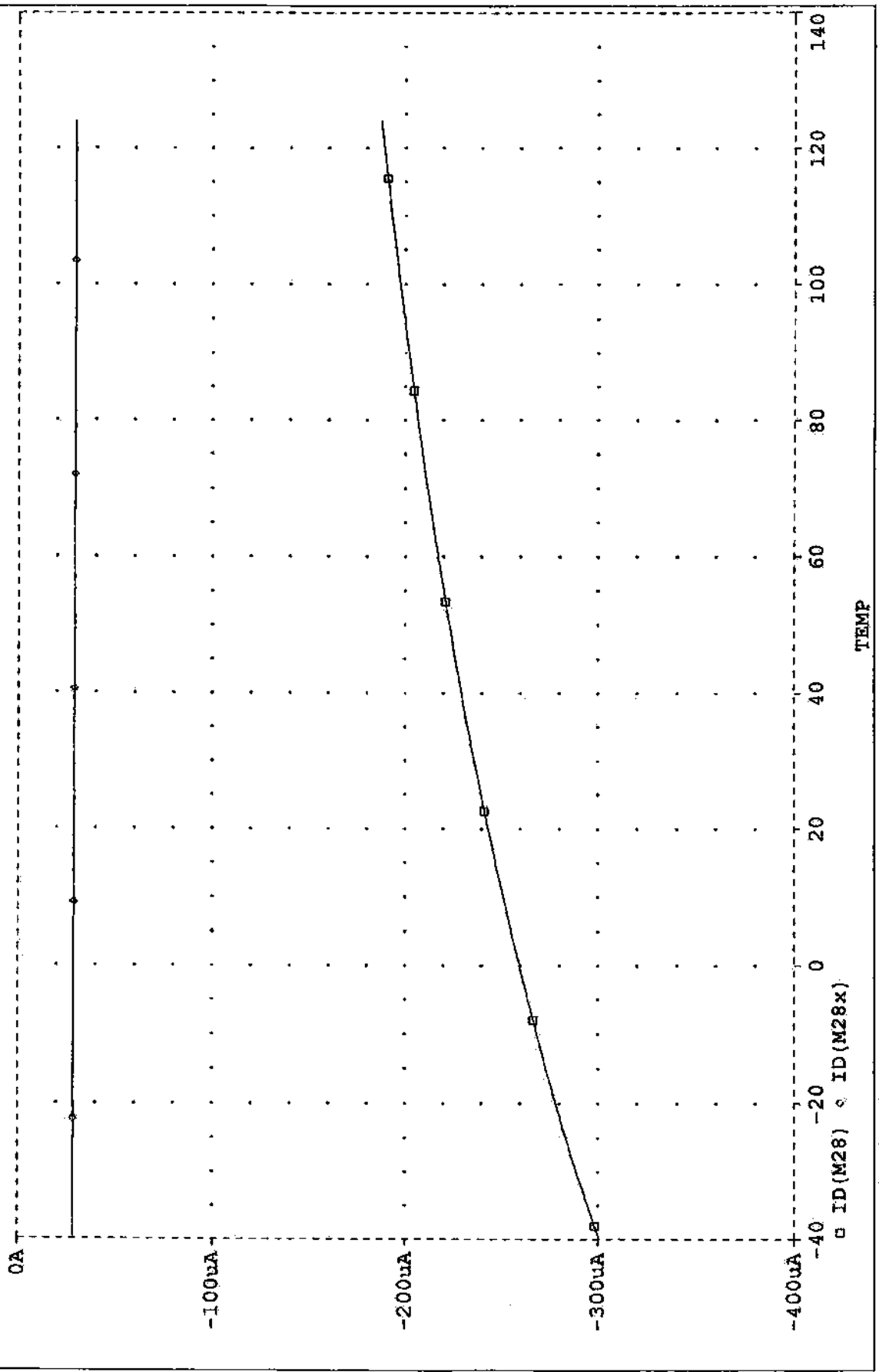
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Temperature: -40.0

(A) Reference Current Drift vs. Temperature



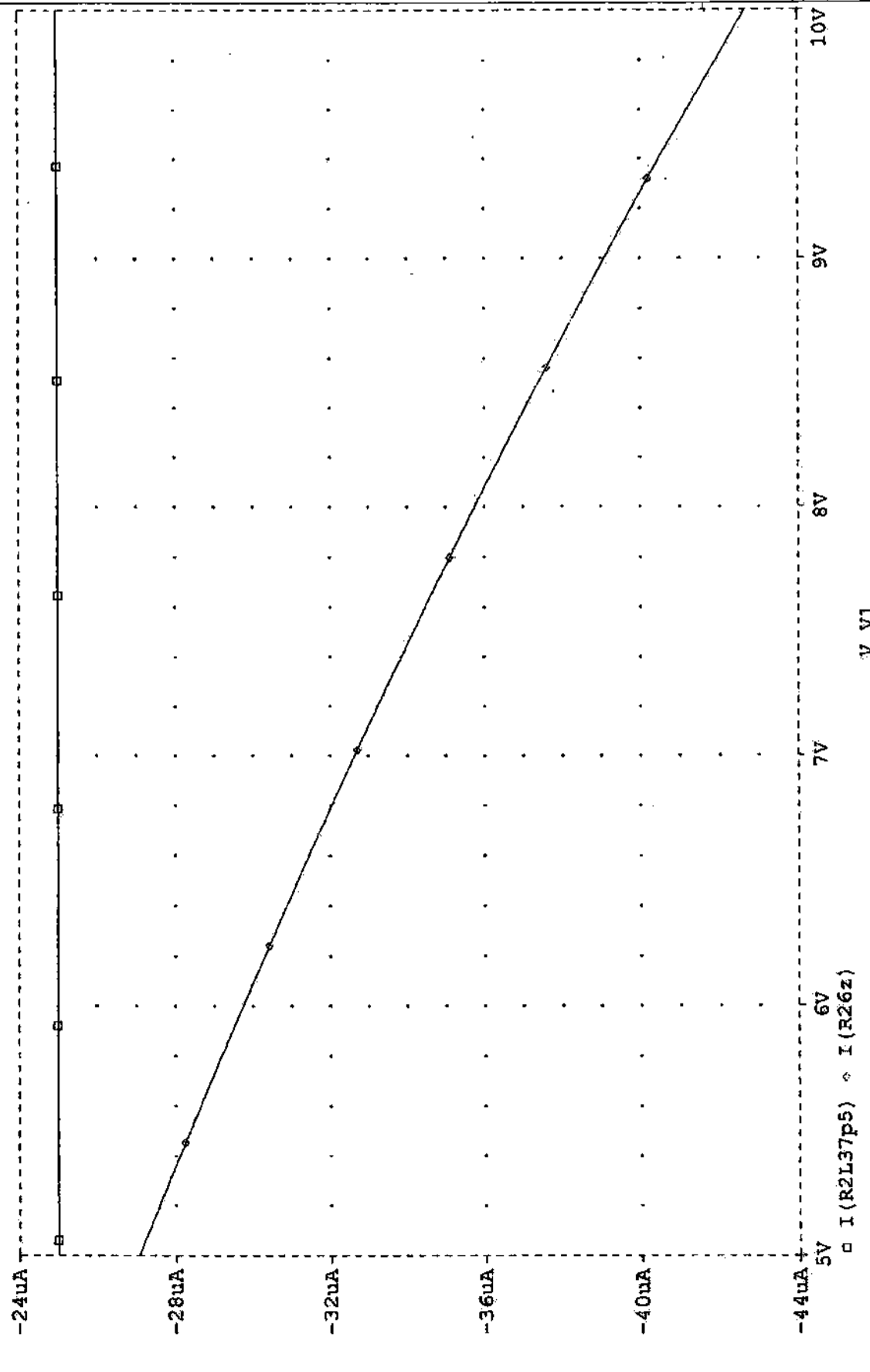
Date: August 11, 1999 Page 1 Time: 08:24:39

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Temperature: 27.0

Date/Time run: 08/12/99 06:16:49

(A) VCC Sweep of SMP and '367 Circuits

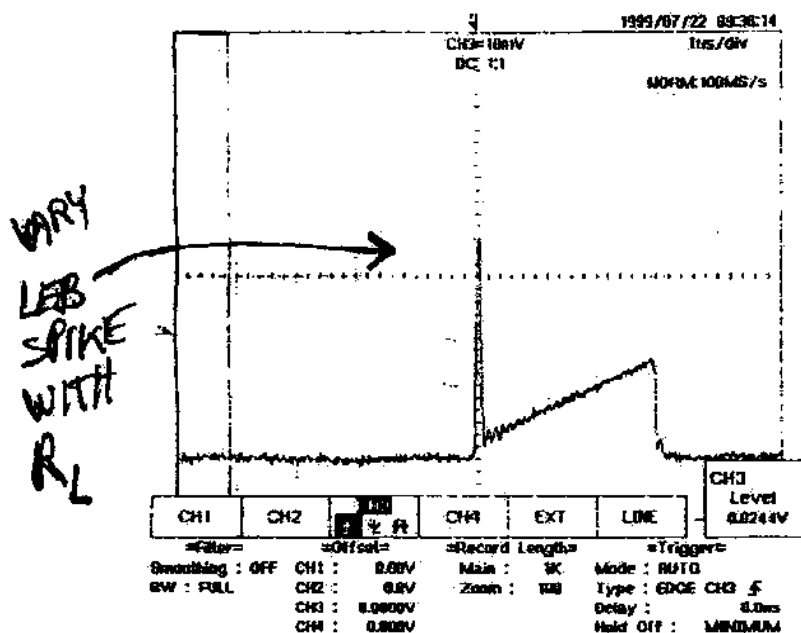


Date: August 12, 1999

Page 1

Time: 06:19:55

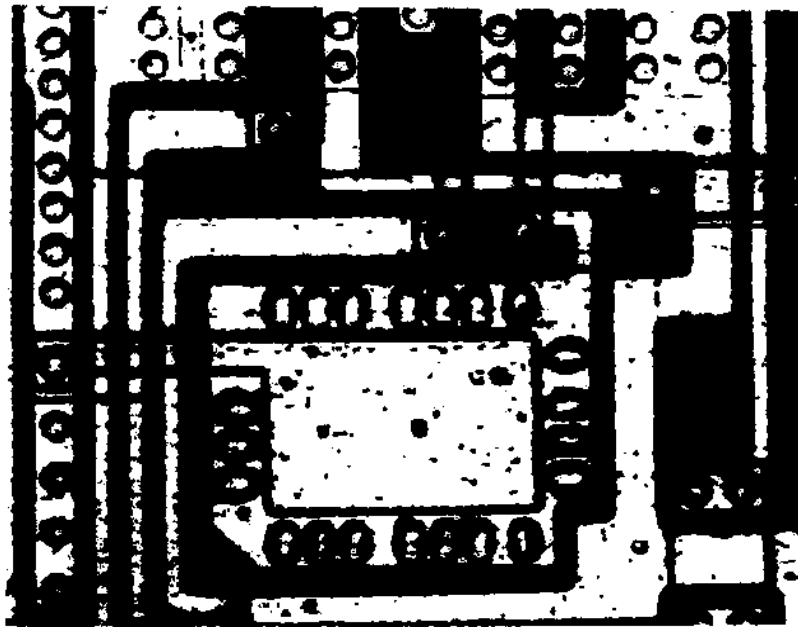
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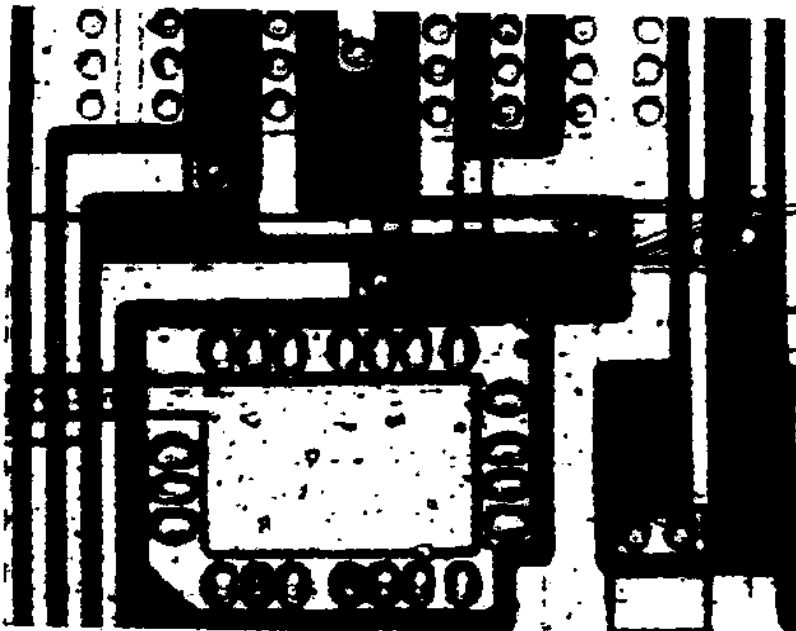
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$$TOP223 \quad V_o = 5V$$

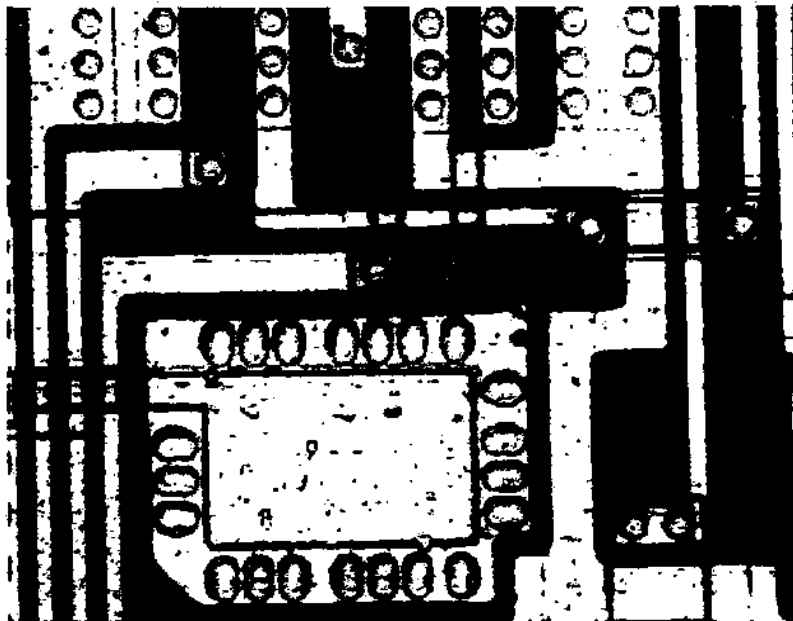
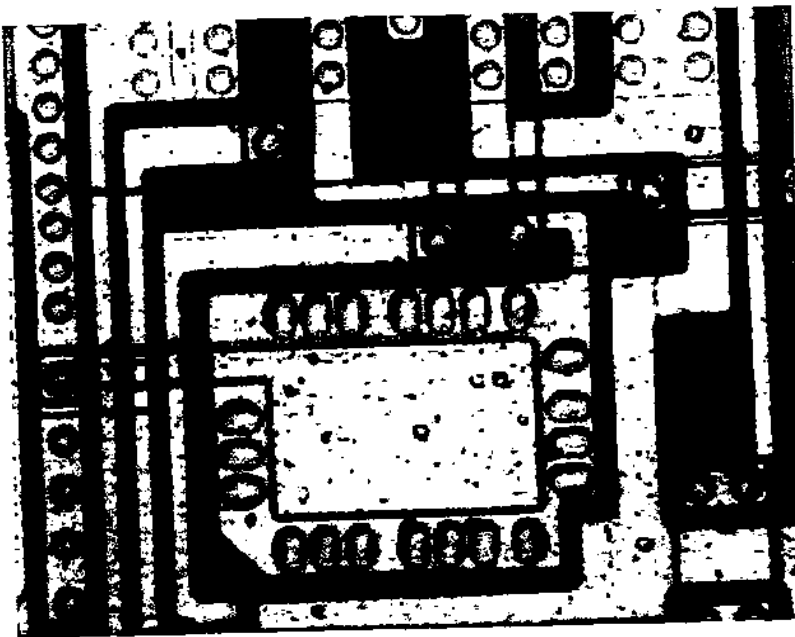
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80 Ω	540mA	530mA
70 Ω	560mA	540mA
60 Ω	580mA	560mA
50 Ω	620mA	600mA
40 Ω	660mA	640mA
30 Ω	730mA	720mA
20 Ω	810mA	SHUTDOWN
10 Ω	840mA	SHUTDOWN
27 Ω		ONSET OF SHUTDOWN



←
LEB
TIMING
CAPACITOR



→ CAPACITOR
CONNECTION
CUT

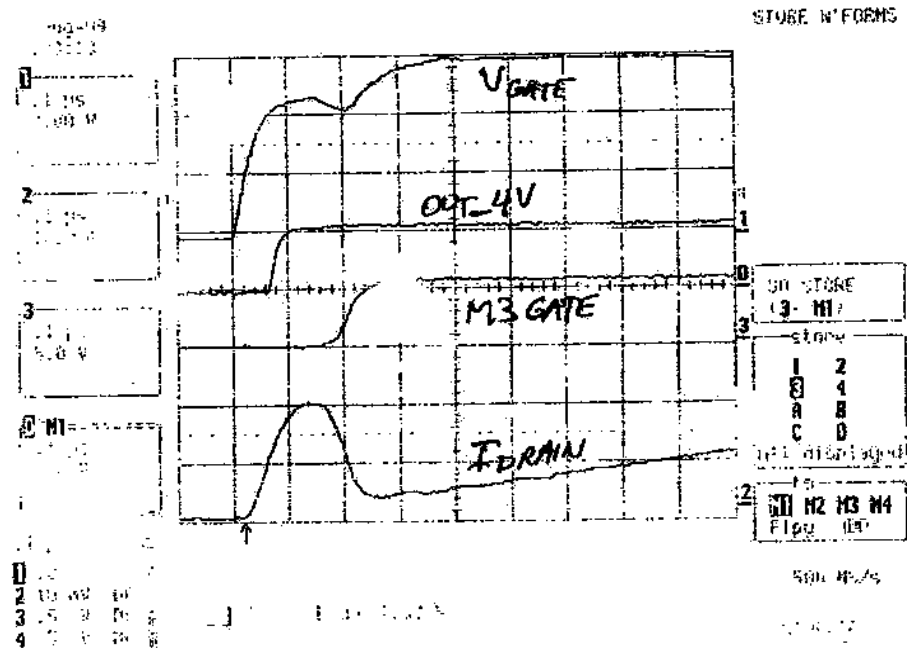


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TOP 210

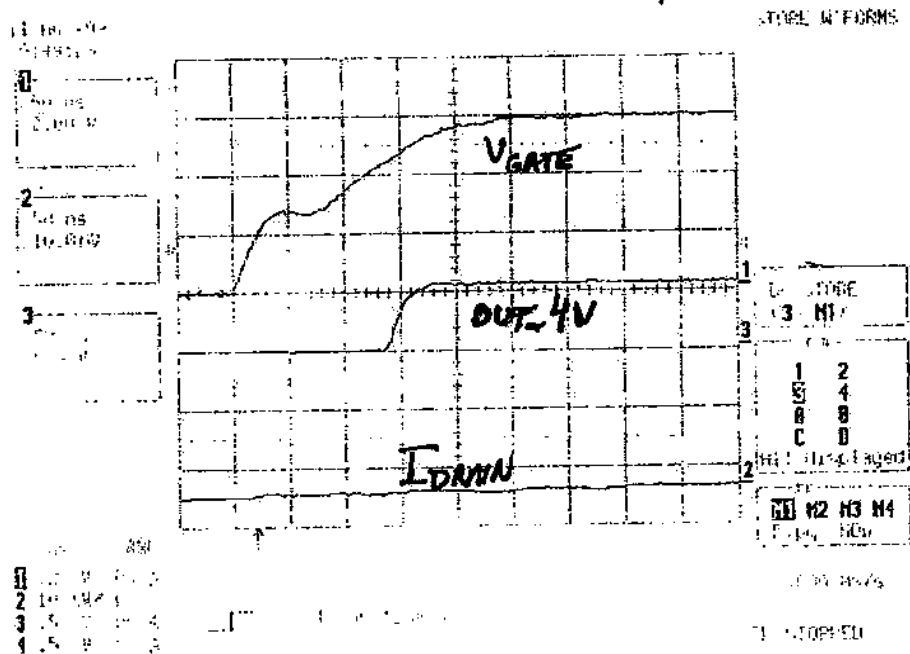
340^v

68pF



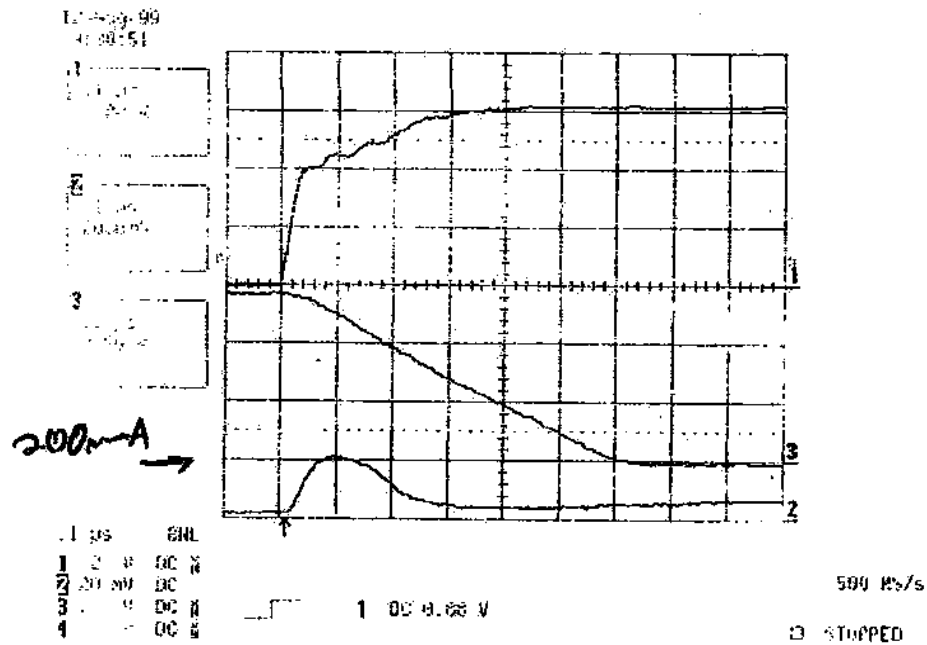
TOP 210

100v

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TNY253

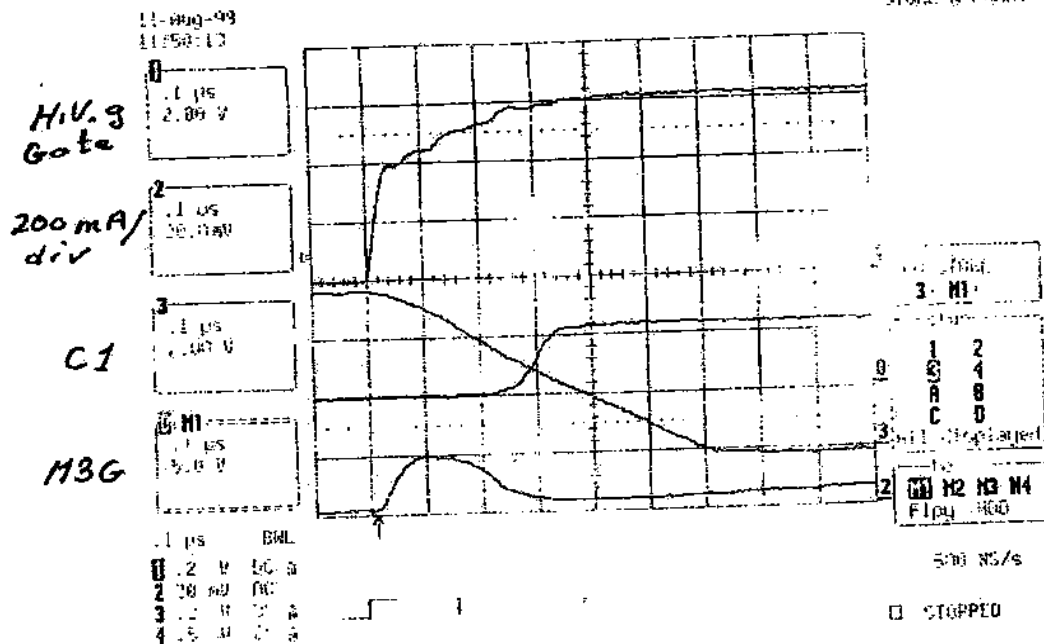
47pF 340V



TNY253 340VDC 47pF

8-11-99

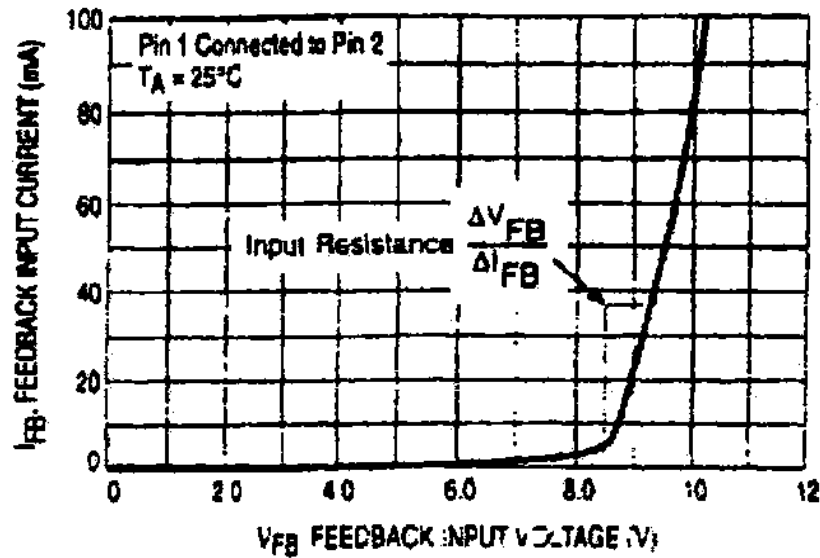
STORE W'FORMS



E

MOTOROLA 7X

Figure 6. Feedback-Input Current versus Input Voltage

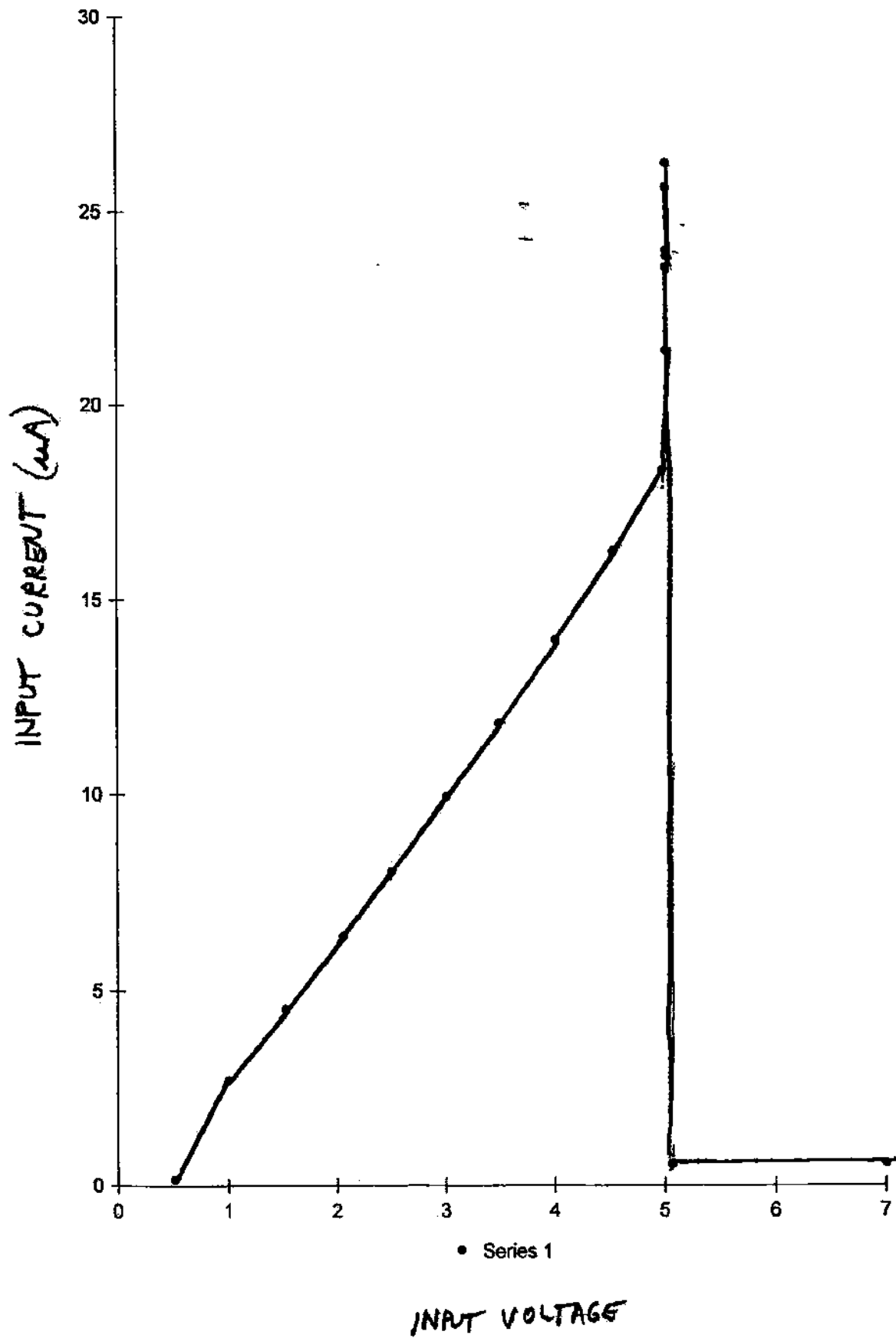


MIN DUTY CYCLE

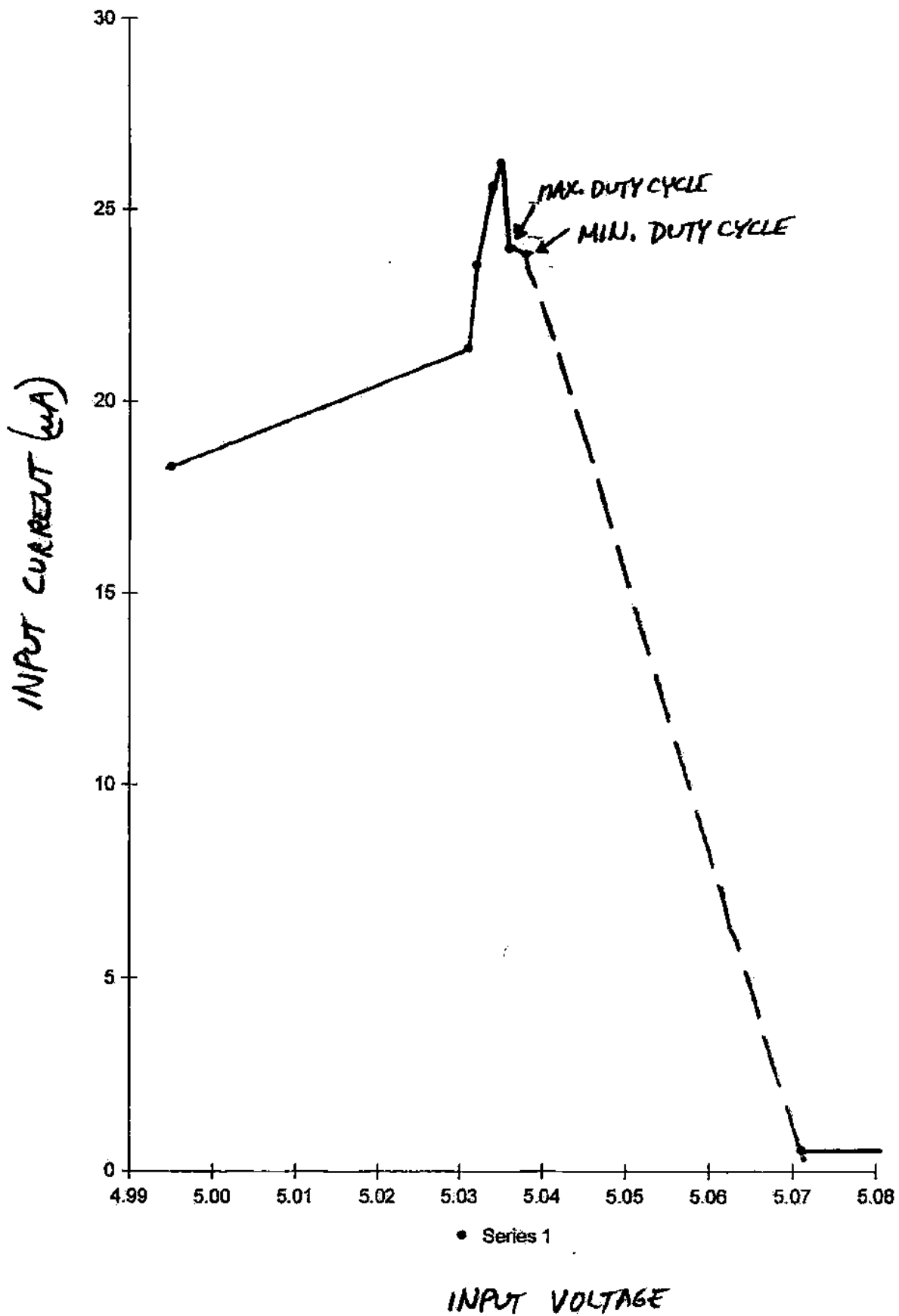
NORMAL OPERATING RANGE

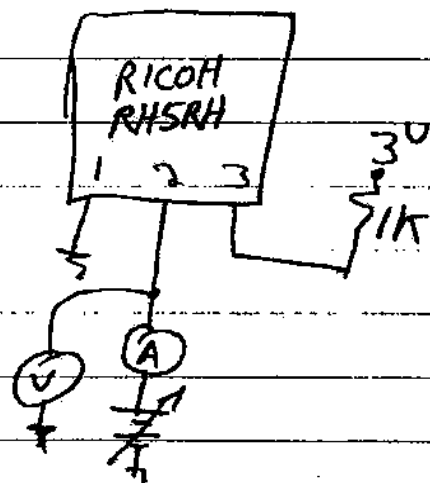
MAX. DUTY CYCLE

RICOH 5H5RH 501A



RICOH 5H5RH501A





<u>V</u>	<u>I</u>
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1.003	2.72
1.530	4.54
2.057	6.38
2.509	8.04
3.011	9.95
3.497	11.83
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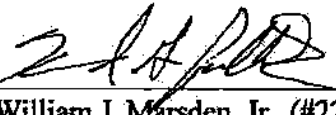
CERTIFICATE OF SERVICE

I, Howard G. Pollack, hereby certify that on this 12th day of August, 1999, a true and correct copy of the Rebuttal Report of Robert Blauschild was caused to be served via facsimile and Federal Express on the attorneys of record at the following addresses as indicated:

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400 South Hope Street
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William J. Wade
Richard, Layton & Finger
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FISH & RICHARDSON P.C.

By 
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901 Market Street, Suite 400
Wilmington, Delaware 19801
Telephone: (302) 652-5070
Facsimile: (302) 652-0607

Frank E. Scherkenbach (CA #142549)
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Attorneys for Plaintiff/Counterdefendant,
POWER INTEGRATIONS, INC.

112411.PAL1

CERTIFICATE OF SERVICE
Case No. CA98-490 JJF

PIF 05007

EXHIBIT B

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

POWER INTEGRATIONS, INC.,)	
)	
Plaintiff,)	
)	
v.)	C.A. No. 04-1371-JJF
)	
FAIRCHILD SEMICONDUCTOR)	
INTERNATIONAL, INC., and FAIRCHILD)	
SEMICONDUCTOR CORPORATION,)	
)	
Defendants.)	

**DEFENDANTS FAIRCHILD SEMICONDUCTOR
INTERNATIONAL, INC. AND FAIRCHILD SEMICONDUCTOR
CORPORATION'S FIRST SET OF REQUESTS FOR PRODUCTION**

Pursuant to Rule 34 of the Federal Rules of Civil Procedure, Defendants Fairchild Semiconductor International, Inc. and Fairchild Semiconductor Corp. hereby request that Plaintiff Power Integrations, Inc. produce for inspection and copying the documents and things described in the following Requests within thirty (30) days after service hereof at the offices of Orrick Herrington & Sutcliffe LLP, 1000 Marsh Road, Menlo Park, CA 94025.

DEFINITIONS

The following definitions shall apply when used in these requests:

- A. "Fairchild" as used herein refers to Fairchild Semiconductor International, Inc. and Fairchild Semiconductor Corp.
- B. "Power Integrations" as used herein refers to Power Integrations, Inc. and its subsidiaries, divisions, affiliates, successors, predecessors, and any employees, officers, directors, attorneys, agents, associates, or representatives thereof.
- C. "Power Integrations Patents" as used herein refers to U.S. Patent No. 4,811,075 (the "075 Patent"), U.S. Patent No. 6,107,851, (the "851 Patent"), U.S. Patent No. 6,229,366 (the "366 Patent"), and U.S. Patent No. 6,249,876 (the "876 Patent"), and all applications, continuations, continuations-in-part, divisionals, reexaminations, or reissues thereof and all foreign applications and patents which claim priority to any of the above.

D. "Related Patent(s)/Application(s)" as used herein means (1) any U.S. or foreign patent or patent application related to any of the Power Integrations Patents or their applications by way of subject matter or claimed priority date, (2) all parent, divisional, continuation, continuation-in-part, reissue, reexamination, extension, and foreign counterpart patents and applications thereof, and/or (3) any patent or patent application filed by one or more of the same applicant(s) (or his or her assignees) that refers to any of (1) or (2) herein.

E. "Patent Application" as used herein means the application, including material purportedly incorporated by reference therein, and any amendments, additions or deletions, from which one of the Power Integrations Patents actually issued.

F. "Priority Application" as used herein shall include the Patent Application and any prior application, including material purportedly incorporated by reference therein, and any amendments, additions or deletions to which any of the Power Integrations Patents claims priority under 35 U.S.C. §120 or otherwise.

G. "Accused Fairchild Products" as used herein mean each and every Fairchild product, method, structure or action alleged in Power Integrations Complaint, or otherwise alleged by Power Integrations in this action, of infringing or causing infringement of any of the claims of any of the Power Integrations Patents whether produced by Fairchild, or its subsidiary, parent, or any other affiliated entity.

H. "Power Integrations Patented Product" as used herein means any invention, product, or article comprising the alleged technology claimed, disclosed, or described in the asserted Power Integrations Patents, made, used, distributed or sold by or with the authorization of Power Integrations.

I. "PWM" as used herein means pulse width modulation.

J. "Document(s)" as used herein is used in its broadest sense and includes, without limitation, the original and all non-identical copies (including drafts and those with any notations) of all "documents," "writings," "recordings," and "photographs" of the types designated in Rule 34(a) of the Federal Rules of Civil Procedure and Rule 1001 of the Federal

Rules of Evidence, and includes materials in digital forms. The term "document(s)" includes but is not limited to any book, pamphlet, periodical, letter, memorandum, diary, file, note, calendar, newspaper, magazine, statement, bill, invoice, order, policy, telegram, correspondence, summary, receipt, opinion, investigation statement or report, schedule, manual, financing statement, audit report, tax return, report, record, study, handwritten note, drawing, working paper, chart, index, tape (audio or visual), microfilm, data sheet, e-mail and all other electronic and digital forms of communication, however produced.

K. "Thing" as used herein refers to any physical object other than a "document."

L. "Communication" as used herein refers to any contact, oral or documentary, formal or informal, at any place or under any circumstances whatsoever whereby information of any nature is transmitted or transferred, including, without limitation, a single person seeing or hearing any information by any means.

M. "Concerning" as used herein refers to referring to, relating to, pertaining to, relevant to, material to, embodying, evidencing, affecting, comprising, discussing, dealing with, supporting, contradicting or otherwise considering in any manner whatsoever the subject matter of the inquiry.

N. "Any" and "all" as used herein refer to and include the other; the terms "and" and "or" shall each mean and include the other, and the singular form of any word and the plural form of the word shall each mean and include the other.

INSTRUCTIONS

1. These requests call for information (including any information contained in or on any document or thing) that is available to Power Integrations, or in its possession, custody, or control, including all information known or available to, or in the possession, custody, or control of, Power Integrations' subsidiaries, attorneys, agents, representatives, investigators, or any other person acting on behalf of Power Integrations or under the direction or control of Power Integrations, or its attorneys or agents.

2. If Power Integrations withholds documents responsive, in whole or in part, to any

request on any basis, please comply with Rule 26(b)(5) of the Federal Rules of Civil Procedure and identify: (a) the privilege or immunity claimed; (b) the nature of the document or thing (letter, memorandum, notes, etc.); (c) its date; (d) its author(s) and recipient(s), if any; (e) each and every person who has seen such document or a portion of such document; and (f) a general description of the document and its subject matter.

3. If Power Integrations objects to any request or part thereof, produce all documents to which the objection does not apply.

4. If in answering these requests Power Integrations claims any ambiguity in either a request or a definition or an instruction applicable thereto, identify in the response the allegedly ambiguous language and state the interpretation Power Integrations used in responding.

5. In the event that multiple copies of a document exist, produce every copy on which appear any notations or markings of any sort not appearing on any other copy.

6. If Power Integrations or its attorneys know of the existence, past or present, of any document described in any of these requests, but such document is not presently in its possession, custody, or control or in the possession, custody, or control of its agents, representatives, or attorneys, Power Integrations shall so state in response to the request, identify such document in response to the request, and identify the individual in whose possession, custody, or control the document was last known to reside. If any responsive documents have been destroyed or otherwise removed from Power Integrations' custody or control, please state when, how, and why such document was destroyed or removed from its custody.

7. The singular form of a word shall be interpreted as plural and the plural form of a word shall be interpreted as singular whenever appropriate in order to bringing within the scope of these requests any document which might otherwise be considered beyond its scope.

8. The documents produced in response to these requests shall be: (i) organized and designated to correspond to the categories in these requests or, if not, (ii) produced as they are maintained in the normal course of business, and in either case:

a. all documents that cannot be legibly copied shall be produced in their original

form; otherwise, you may produce photocopies (but Fairchild reserves the right to inspect the originals); and

b. each page shall be given a discrete production number.

9. If any of the documents cannot be produced in full, Power Integrations should produce them to the extent possible, specifying the reasons for the inability to produce the remainder and stating whatever information, knowledge or belief you have concerning the unproduced portion.

10. Electronic records and computerized information should be produced in an intelligible format or together with a description of the system from which it is derived, sufficient to permit rendering the material in an intelligible format.

11. The obligation to provide the documents and things sought by these discovery requests is continuing within the requirements of Federal Rule of Civil Procedure 26(e).

REQUESTS FOR PRODUCTION

REQUEST FOR PRODUCTION NO. 1:

All documents and things concerning Fairchild or any Fairchild subsidiary or related entity.

REQUEST FOR PRODUCTION NO. 2:

All documents and things concerning any Accused Fairchild Product.

REQUEST FOR PRODUCTION NO. 3:

Documents sufficient to identify all current and former officers and directors of Power Integrations from the date that the company was incorporated until the present, including, but not limited to, internal telephone directories and organizational charts.

REQUEST FOR PRODUCTION NO. 4:

Documents sufficient to describe the current corporate organization of Power Integrations, including, but not limited to, the identification of all ownership interests, the names of the members of the board of directions, the identification of managerial, engineering and marketing staff, reporting relationships of any Power Integrations employees and the current

organizational structure.

REQUEST FOR PRODUCTION NO. 5:

Documents sufficient to identify all of Power Integrations' subsidiaries, corporate parents, divisions, and related entities, whether foreign or domestic, and to describe the relationship between such entities.

REQUEST FOR PRODUCTION NO. 6:

All documents and things concerning Power Integrations' ability to control or gather documents from its parents, subsidiaries, divisions, and other operations, whether foreign or domestic.

REQUEST FOR PRODUCTION NO. 7:

All documents and things concerning the decision to bring this action against Fairchild.

REQUEST FOR PRODUCTION NO. 8:

All documents and things concerning this lawsuit, including, but not limited to, correspondence with any third party concerning this litigation.

REQUEST FOR PRODUCTION NO. 9:

All business plans, financial forecasts, or board meeting minutes of Power Integrations which discuss or mention Fairchild, the Power Integrations Patents, or this litigation.

REQUEST FOR PRODUCTION NO. 10:

All documents and things concerning any suspicion, belief, conclusion, determination, or knowledge that any person, product, device, technology, or system other than the Accused Fairchild Products infringe any claim of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 11:

All documents and things concerning any lawsuit, arbitration, or other legal proceeding alleging infringement by any entity other than Fairchild of one or more claims of the Power Integrations Patents, including, but not limited to, pleadings, deposition transcripts, and expert reports.

REQUEST FOR PRODUCTION NO. 12:

All documents and things concerning the litigation between Power Integrations and Motorola.

REQUEST FOR PRODUCTION NO. 13:

All documents and things concerning the decision whether to bring any lawsuit, arbitration, or other legal proceeding alleging infringement by any person other than Fairchild of one or more claims of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 14:

All documents and things concerning any communication between Power Integrations and any third person regarding any lawsuit, arbitration, or other legal proceeding alleging infringement of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 15:

All documents and things concerning any settlement proposal or agreement related to any lawsuit, arbitration, or other legal proceeding alleging infringement or seeking a declaratory judgment of non-infringement, invalidity or unenforceability of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 16:

All documents and things concerning any investigation made by or on behalf of Power Integrations prior to the filing of the Complaint regarding whether Fairchild infringed any claim of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 17:

All documents and things concerning any testing or reverse engineering of any Fairchild product.

REQUEST FOR PRODUCTION NO. 18:

All documents and things concerning any reverse engineering of any product to determine whether or not it infringed the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 19:

All documents and things concerning any comparison of the design, structure, function,

manufacture, or operation of any product, device, technology, or system against any claim of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 20:

All documents and things concerning the manner in which Power Integrations determined that Fairchild made, used, offered for sale, sold, or imported into the United States any product that Power Integrations contends infringes any claim of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 21:

All documents and things concerning the manner in which Power Integrations determined that Fairchild induced other to infringe any claim of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 22:

All documents and things concerning the manner in which Power Integrations determined that Fairchild contributed to others infringement of any claim of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 23:

All documents and things concerning any test, experiment, analysis, or review conducted by or on behalf of Power Integrations to determine, or which otherwise shows, the nature of any performance characteristic or mode of operation of any product, device, technology, or system of Fairchild or any third party that Power Integrations contends uses or embodies any alleged invention described by any claim of the Power Integrations Patents, including, but not limited to, tests, experiments, analyses and reviews used to determine, or which otherwise show, whether or not any such product, device, technology, or system embodies any of the structural or functional limitations of any such claim.

REQUEST FOR PRODUCTION NO. 24:

All documents and things concerning any Power Integrations policy, strategy, plan, or practice, whether formal or informal regarding patents, including, but not limited to, filing patent applications, acquiring patents or patent applications from other persons, exploiting patents or patented technology, charging other persons with patent infringement, enforcing patents, licensing patents or patented technology, or cross-licensing patents or patented technology.

REQUEST FOR PRODUCTION NO. 25:

All documents and things concerning any Power Integrations policy, instruction or set of instructions, directive, policy statement, study, or other communication relating to the destruction or retention of documents or records including, but not limited to, any policy regarding the destruction or retention of electronic mail.

REQUEST FOR PRODUCTION NO. 26:

All documents and things concerning any Power Integrations policy, instruction or set of instructions, directive, policy statement, study, or other communication relating to invention disclosure, recording, or evaluation.

REQUEST FOR PRODUCTION NO. 27:

All documents and things concerning the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 28:

All communications with any third parties concerning the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 29:

All documents and things concerning any PWM Product produced, manufactured, displayed, demonstrated, used, tested, offered for sale, licensed or sold by Power Integrations or any of its licensees that Power Integrations claims are covered by the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 30:

All documents and things concerning any test, experiment, examination, analysis, or review conducted with respect to any PWM Product offered for sale, licensed or sold by Power Integrations or any of its licensees that Power Integrations claims are covered by the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 31:

A set of drawings, diagrams, schematics, specifications, and operating instructions sufficient to fully describe each prototype, product, device, technology, and system that uses or embodies, in whole or in part, any alleged invention described by any Power Integrations Patented Product.

REQUEST FOR PRODUCTION NO. 32:

Five samples of each Power Integrations product that Power Integrations contends practices any claim of the Power Integrations Patents, that has ever been marked with any of the Power Integrations Patent numbers, or for which Power Integrations claims it lost sales or suffered price erosion due to Fairchild's alleged infringement of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 33:

All financial documents from October 20, 1998 to the present, including, but not limited to, financial statements (including p&l), budgets, projections, five-year or other long range plans, strategic plans, audit reports, and all SEC filings that reflect financial data about Power Integrations products or systems that practice all of the limitations of any of the asserted claims of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 34:

All financial documents from October 20, 1998 to the present, including, but not limited to, financial statements (including p&l), budgets, projections, five-year or other long range plans, strategic plans, audit reports, and all SEC filings that reflect financial data about Power Integrations products or systems that Power Integrations contends lost sales due to Fairchild's alleged infringement of the asserted claims of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 35:

All documents and things authored in whole or in part by the inventors of the Power Integrations Patents concerning the Power Integrations Patents, products or methods covered by the Power Integrations patents, or the technology described or claimed by the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 36:

All documents and things cross-referencing Power Integrations parts to any of the Accused Fairchild Products.

REQUEST FOR PRODUCTION NO. 37:

All documents and things cross-referencing Power Integrations PWM devices with

devices manufactured or sold by Fairchild or third parties.

REQUEST FOR PRODUCTION NO. 38:

All documents and things concerning the conception, discovery, design, development, testing, reduction to practice, or diligence in the reduction to practice of any invention claimed in any Power Integrations Patent.

REQUEST FOR PRODUCTION NO. 39:

All documents and things concerning the invention of the Power Integrations Patents including, but not limited to, inventor notebooks, engineering notebooks, invention disclosure statements, and patent committee meeting notes and reports.

REQUEST FOR PRODUCTION NO. 40:

All documents and things concerning the involvement and contributions of persons other than the named inventors to the conception, reduction to practice, or invention of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 41:

All documents and things concerning any testing, developmental, experimental, or research activity conducted in connection with any Power Integrations Patented Product, including, but not limited to, the design, construction, and operation of the first device or prototype embodying or intended to embody inventions in any invention in the Power Integrations Patents and any subsequent such device or prototype.

REQUEST FOR PRODUCTION NO. 42:

All documents and things concerning the first disclosure, display, or demonstration of any Power Integrations Patented Product or of any invention claimed in any Power Integrations Patent to any person other than an alleged inventor thereof.

REQUEST FOR PRODUCTION NO. 43:

All documents and things concerning the first public use, first sale or offer for sale, first lease or offer to lease, or other first commercialization of any Power Integrations Patented Product or of any invention claimed in any Power Integrations Patent.

REQUEST FOR PRODUCTION NO. 44

For each claim of each of the Power Integrations Patents, Patent Applications, and any Related Patents/Applications, all documents and things concerning, in whole or in part, a chronological description of all or part of the development of the claimed subject matter from conception to actual reduction to practice.

REQUEST FOR PRODUCTION NO. 45

All documents and things upon which Power Integrations intends to rely in support of its contentions, if any, that any claim found in the Power Integrations Patents is entitled to a priority date earlier than the filing date of that patent.

REQUEST FOR PRODUCTION NO. 46:

All documents and things concerning the prosecution of the Power Integrations Patents before any patent office, domestic or foreign.

REQUEST FOR PRODUCTION NO. 47:

All documents and things concerning any communication to or from the U.S. Patent and Trademark Office concerning the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 48:

All documents and things concerning any application or request to the U.S. Patent and Trademark Office related to the Power Integrations Patents, including, but not limited to, all drafts of any such application or request, the complete prosecution file for any such application or request, all applications and requests from which any of the above may claim priority, all documents reviewed or relied upon in connection with the preparation or prosecution of any such application or request, and all communications concerning any such application or request.

REQUEST FOR PRODUCTION NO. 49:

All documents and things concerning any draft communication to the U.S. Patent and Trademark Office, including, but not limited to, draft applications, draft amendments, and draft responses to office actions, related to the prosecution of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 50:

All documents and things cited to the PTO during prosecution of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 51:

All documents and things concerning any decision to provide any information or material to U.S. Patent and Trademark Office in connection with the prosecution of any application related to the Power Integrations Patents, whether such decision occurred prior to, during, or after the close of prosecution on the merits.

REQUEST FOR PRODUCTION NO. 52

All documents and things that concern the prosecution of the Power Integrations Patents, Patent Applications, Priority Applications or any Related Patents/Applications, and that identify any person who participated in any manner in the prosecution, including, but not limited to, any person who participated in any manner in any searches conducted in connection with the subject matter of the Power Integrations Patents, Patent Applications, or any Related Patent/Application, or any person who participated in the preparation of any document(s) in such prosecution.

REQUEST FOR PRODUCTION NO. 53

All documents and things related to, considered, or reviewed in the course of the preparation of any document in the prosecution of the Power Integrations Patents, Patent Applications, Priority Applications or any Related Patent/Application.

REQUEST FOR PRODUCTION NO. 54:

All documents and things concerning the need or desirability of filing any application for reissue, request for reexamination, or certificate of correction of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 55:

All abandoned or pending domestic and foreign patent applications claiming priority to United States Patent Application Serial No. 041,994, filed April 24, 1987.

REQUEST FOR PRODUCTION NO. 56:

All documents and things concerning any communication to or from the U.S. Patent and

Trademark Office or any foreign patent office, relating to any abandoned or pending domestic and foreign patent applications claiming priority to United States Patent Application Serial No. 041,994, filed April 24, 1987.

REQUEST FOR PRODUCTION NO. 57:

All abandoned or pending domestic and foreign patent applications claiming priority to United States Patent Application Serial No. 09/573,081, filed May 16, 2000.

REQUEST FOR PRODUCTION NO. 58:

All documents and things concerning any communication to or from the U.S. Patent and Trademark Office or any foreign patent office, relating to any abandoned or pending domestic and foreign patent applications claiming priority to United States Patent Application Serial No. 09/573,081, filed May 16, 2000.

REQUEST FOR PRODUCTION NO. 59:

All abandoned or pending domestic and foreign patent applications claiming priority to United States Patent Application Serial No. 09/080,774, filed May 18, 1998.

REQUEST FOR PRODUCTION NO. 60:

All documents and things concerning any communication to or from the U.S. Patent and Trademark Office or any foreign patent office, relating to any abandoned or pending domestic and foreign patent applications claiming priority to United States Patent Application Serial No. 09/080,774, filed May 18, 1998.

REQUEST FOR PRODUCTION NO. 61:

All abandoned or pending domestic and foreign patent applications claiming priority to United States Patent Application Serial No. 09/192,959, filed November 16, 1998.

REQUEST FOR PRODUCTION NO. 62:

All documents and things concerning any communication to or from the U.S. Patent and Trademark Office or any foreign patent office, relating to any abandoned or pending domestic and foreign patent applications claiming priority to United States Patent Application Serial No. 09/192,959, filed November 16, 1998.

REQUEST FOR PRODUCTION NO. 63:

All documents and things concerning the need or desirability of filing any foreign patent application (including any application or request for reexamination or reissue of any foreign patent) in connection with any alleged invention that corresponds in whole or in part to any alleged invention described by any claim of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 64:

All documents and things concerning any foreign patent application (including any challenge, application, request for reexamination or reissue of any foreign patent) filed in connection with any alleged invention that corresponds in whole or in part to any of the Power Integrations Patents, including, but not limited to, all drafts of any such application or request, the complete prosecution file for any such application or request, all applications and requests from which any of the above may claim priority, all documents reviewed or relied upon in connection with the preparation or prosecution of any such application or request, and all communications concerning any such application or request.

REQUEST FOR PRODUCTION NO. 65:

All documents and things concerning any communication to or from any foreign patent office or agency concerning any foreign patent for any alleged invention that corresponds in whole or in part to any alleged invention described by any claim of the Power Integrations Patents, or concerning any application for such a patent application (including any application or request for reexamination or reissue of any foreign patent), whether or not a patent ultimately issued on the application.

REQUEST FOR PRODUCTION NO. 66:

All documents and things concerning the scope, definition, interpretation or construction of any term or element used in the specification or any claim of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 67:

All documents and things concerning any scope, definition, interpretation or construction of any term or element of any claim of the Power Integrations Patents that was provided to or

received from any third party.

REQUEST FOR PRODUCTION NO. 68:

All documents and things that Power Integrations contends to be extrinsic evidence of the meaning of any term of any claim of the Power Integrations patents.

REQUEST FOR PRODUCTION NO. 69:

All documents and things concerning Power Integrations' use in the ordinary course of its business of any term or element of any claim of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 70

For each element or limitation recited in the claims of the Power Integrations Patents, all documents and things that identify, in whole or in part, any or all of the corresponding structure, material or acts described or shown in the patent's specification.

REQUEST FOR PRODUCTION NO. 71

All documents and things that identify, in whole or in part, any defect, misstatement, error, or unintended omission of any kind in any of the Power Integrations Patents, File Histories, Patent Applications, Priority Applications or any Related Patents/Applications.

REQUEST FOR PRODUCTION NO. 72:

All documents and things concerning any communication between Power Integrations and any third party relating to any Power Integrations Patents, Fairchild, or this litigation.

REQUEST FOR PRODUCTION NO. 73:

All documents and things that Power Integrations has submitted to its auditors from 2002 to the present.

REQUEST FOR PRODUCTION NO. 74:

All documents and things concerning Fairchild's alleged infringement of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 75:

All documents and things concerning any activity or statement by Fairchild that Power Integrations alleges induced others to infringe the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 76:

All documents and things concerning whether or not any Fairchild product is for use in practicing a process covered by the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 77:

All documents and things concerning whether or not any Fairchild product is a material part of the invention of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 78:

All documents and things concerning whether or not any Fairchild product is especially made or especially adapted for use in an infringement of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 79:

All documents and things concerning whether or not any Fairchild product is a staple article or commodity of commerce suitable for substantial non-infringing use.

REQUEST FOR PRODUCTION NO. 80:

All documents and things concerning the scope, validity or invalidity, infringement or noninfringement, or enforceability or unenforceability of the Power Integrations Patents, including, but not limited to, any study, search, investigation, or opinion relating thereto.

REQUEST FOR PRODUCTION NO. 81:

All documents and things concerning any search for prior art relevant to the Power Integrations Patents, the applications leading to the Power Integrations Patents, or any Related Patent(s)/Application(s).

REQUEST FOR PRODUCTION NO. 82:

All documents and things identified by any person as prior art relevant to any claim of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 83:

All textbooks, articles, journals, or other publications of any kind concerning any alleged invention described by the claims of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 84:

All documents and things concerning any prior art or possible prior art with respect to the Power Integrations Patents, including, but not limited to, the results of any search for prior art conducted with respect to the subject matter of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 85:

All documents and things concerning any secondary considerations that Power Integrations contends is evidence that any invention described by any of the claims of the Power Integrations Patents is not obvious.

REQUEST FOR PRODUCTION NO. 86:

All documents and things concerning any failure by others to develop the invention claimed in each of the asserted claims of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 87:

All documents and things describing any problems regarding Power Integrations PWM Products.

REQUEST FOR PRODUCTION NO. 88:

All documents and things concerning any failure by those skilled in the art to appreciate any problem alleged to have been solved by any alleged invention described by the claims of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 89:

All documents and things concerning any copying of or praise for the invention claimed in each of the asserted claims of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 90:

All documents and things authored outside of Power Integrations concerning, critiquing, objecting to, criticizing, complimenting, praising, or in any other way appraising, any aspect of Power Integrations PWM Products.

REQUEST FOR PRODUCTION NO. 91:

All documents and things concerning any unexpected results achieved by the invention

claimed in each of the asserted claims of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 92:

All documents and things concerning industry acceptance, skepticism or disbelief concerning the invention claimed in each of the asserted claims of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 93:

All documents and things concerning the desirability of patenting or attempting to patent any alleged invention described by any claim of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 94:

All documents and things concerning any product, device, technology, or system that Power Integrations contends uses or embodies, in whole or in part, any alleged invention described by any claims of the Power Integrations Patents, including, but not limited to, technical articles, publications, presentations, advertising materials, promotional literature, publicity releases, sales brochures, pamphlets, and instruction manuals.

REQUEST FOR PRODUCTION NO. 95:

All documents and things concerning long-felt need in the industry that Power Integrations contends has been met by any product, device, technology, or system that uses or embodies, in whole or in part, any alleged invention described by any claims of the Power Integrations Patents, including, but not limited to, all documents and things that tend in any way to support or negate an assertion of such long-felt need in the industry.

REQUEST FOR PRODUCTION NO. 96:

All documents and things concerning any substantial attempt by any person other than Power Integrations and the patentees of the Power Integrations Patents to fill any alleged consumer demand or long-felt need in the industry for any alleged invention described by any of the claims of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 97:

All documents and things concerning any action by any person that was taken to avoid

infringing or to design around any of the asserted claims of Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 98:

All documents and things concerning non-infringing alternatives to or acceptable substitutes for any alleged invention described by any claims of the Power Integrations Patents, or the lack thereof.

REQUEST FOR PRODUCTION NO. 99:

All documents and things concerning any commercial success that Power Integrations contends has been achieved by any product, device, technology, or system that uses or embodies, in whole or in part, any alleged invention described by any claim of the Power Integrations Patents, including, but not limited to, all documents and things that tend in any way to support or negate a contention of any such commercial success.

REQUEST FOR PRODUCTION NO. 100:

All documents and things concerning any nexus between the alleged commercial success of any Power Integrations product that Power Integrations contends practices or embodies any asserted claim of the Power Integrations Patents and the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 101:

All documents and things concerning Power Integrations' efforts to develop, build, implement, acquire, or use a working or commercially successful PWM Product.

REQUEST FOR PRODUCTION NO. 102:

All documents and things concerning Power Integrations communications of any kind with any standards bodies and industry groups in the semiconductor industry.

REQUEST FOR PRODUCTION NO. 103:

All publications that predate the application date of the Power Integrations Patents and teach away from any invention described by any claim of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 104:

All documents and things concerning the ownership of, or any license to, or any assignment or other transfer of interest in, the Power Integrations Patents including, but not

limited to, all assignments or licenses within Power Integrations or affiliate subsidiaries, parents, or other entities.

REQUEST FOR PRODUCTION NO. 105:

All documents and things concerning any effort or attempt, whether successful or not, to assign, sell, transfer, license, or offer to assign, sell, or transfer or license any interest in any of the Power Integrations Patents including, but not limited to, any document relating to negotiation of such attempt.

REQUEST FOR PRODUCTION NO. 106:

All documents and things concerning any communication or decision regarding whether or not to assign, sell, transfer, license, or offer to assign, sell, transfer, or license to any person any interest in any of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 107:

All documents and things concerning any license or cross-license to which Power Integrations is a party.

REQUEST FOR PRODUCTION NO. 108:

All documents and things concerning any license or cross-license requested by or offered to Power Integrations.

REQUEST FOR PRODUCTION NO. 109:

All documents and things concerning any communication between Power Integrations and Fairchild regarding any claimed subject matter of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 110:

All documents and things concerning any notice, warning, or charge of infringement that Power Integrations made or considered making to Fairchild in connection with the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 111:

All documents and things concerning any notice, warning, or charge of infringement that Power Integrations made or considered making to any person in connection with any of the

Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 112:

All documents and things concerning any actual notice to Fairchild of Power Integrations' claims of infringement of any of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 113:

All documents and things concerning any constructive notice to Fairchild of Power Integrations' claims of infringement of any of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 114:

All documents and things concerning whether Power Integrations has notified any person of any potential infringement of any Power Integrations intellectual property right.

REQUEST FOR PRODUCTION NO. 115:

All documents and things concerning any communications between Power Integrations and Fairchild from October 20, 1998 through October 20, 2004, inclusive.

REQUEST FOR PRODUCTION NO. 116:

All documents and things concerning patent marking or other notice to the public of the existence of the Power Integrations Patents by Power Integrations or any licensee of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 117:

All documents and things constituting, evidencing or relating to the identification of any patent markings applied to any Power Integrations product.

REQUEST FOR PRODUCTION NO. 118:

All documents and things concerning Power Integrations' alleged damages from Fairchild's alleged infringement of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 119:

All licenses to which Power Integrations is a party.

REQUEST FOR PRODUCTION NO. 120:

All documents and things concerning licenses or offers to license the Power Integrations

Patents.

REQUEST FOR PRODUCTION NO. 121:

All documents and things concerning royalties or other consideration paid under the terms of any license of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 122:

All documents and things concerning an established or reasonable royalty rate for each of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 123:

All documents and things that evidence, track or relate to revenues, royalties or consideration (in any form) received by Power Integrations from either the Power Integrations Patents or the Power Integrations Patented Products, including, but not limited to, customer royalty reports, discounts, efforts to enforce (or agreements to forebear) collection of revenues and documents describing any customer's willingness or ability to pay such revenues.

REQUEST FOR PRODUCTION NO. 124:

All documents and things concerning the royalties actually received by Power Integrations for the licensing of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 125:

All documents and things concerning any rates paid by the Power Integrations for the use of other patents comparable to the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 126:

All documents and things concerning the nature and scope of any licenses granted by or to Power Integrations as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold.

REQUEST FOR PRODUCTION NO. 127:

All documents and things concerning Power Integrations' policy or marketing program to maintain its patent monopoly by not licensing others to use the invention or by granting licenses under conditions designed to preserve that monopoly or by freely licensing others.

REQUEST FOR PRODUCTION NO. 128:

All documents and things concerning the effect of selling Power Integrations products covered by the Power Integrations Patents in promoting sales of other products of Power Integrations.

REQUEST FOR PRODUCTION NO. 129:

All documents and things concerning the existing value of the products covered by the Power Integrations Patents as a generator of sales of its non-patented items.

REQUEST FOR PRODUCTION NO. 130:

All documents and things concerning the extent of any derivative or convoyed sales as a result of sales of any Power Integrations products covered by the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 131:

All documents and things concerning the established profitability of the products made under the Power Integrations Patents, their commercial success, and their current popularity.

REQUEST FOR PRODUCTION NO. 132:

All documents and things concerning the utility and advantages of the Power Integrations products covered by the Power Integrations Patents over the prior art, if any.

REQUEST FOR PRODUCTION NO. 133:

All documents and things concerning the extent to which Power Integrations has made use of the invention covered by the asserted claims of the Power Integrations Patents; and any evidence probative of the value of that use.

REQUEST FOR PRODUCTION NO. 134:

All documents and things concerning the portion of the profit or of the selling price that may be customary in Power Integrations' business or in comparable businesses to allow for the use of the invention covered by the asserted claims of the Power Integrations Patents or analogous inventions.

REQUEST FOR PRODUCTION NO. 135:

All documents and things concerning the portion of the realizable profit that should be

credited to the invention covered by the asserted claims of the Power Integrations Patents as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by Fairchild.

REQUEST FOR PRODUCTION NO. 136:

All documents and things concerning any evidence or factor of what would be considered relevant by Power Integrations to the hypothetical negotiation of a license to the asserted claims of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 137:

All documents and things concerning any effect on the sale of Power Integrations products by the offer or sale of any Fairchild products anywhere in the world.

REQUEST FOR PRODUCTION NO. 138:

Documents sufficient to disclose the gross profit and net profit currently earned by Power Integrations and its licensees of any product, device, technology, or system that Power Integrations contends uses or embodies, in whole or in part, any alleged invention described by any claims of the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 139:

All documents and things concerning the ability of Power Integrations or licensees of the Power Integrations Patents to make, sell, or deliver products that embody inventions claimed in the Power Integrations Patents to additional customers had Fairchild's allegedly infringing products, devices, technologies, or systems not been on the market.

REQUEST FOR PRODUCTION NO. 140:

All documents and things concerning the effect of the presence of Fairchild, or any of their respective products, devices, technologies, or systems in the marketplace, on Power Integrations' costs, selling price, pricing structure, profits, or revenues for Power Integrations Patented Product.

REQUEST FOR PRODUCTION NO. 141:

All documents and things concerning any analysis (whether internal or from a third-

party) of the value of any Power Integrations intellectual property or patents, including, but not limited to, the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 142:

Documents sufficient to show the total cost, revenue, margin, allocated direct and indirect costs, and profits on a quarterly and annual basis from October 20, 1998–October 20, 2004 of any Power Integrations product for which Power Integrations contends to have lost profit or suffered price erosion due to Fairchild's alleged infringement.

REQUEST FOR PRODUCTION NO. 143:

All documents and things concerning the total amount of lost profits or price erosions, on a quarterly and annual basis, allegedly caused by each Fairchild product Power Integrations accused of infringing the Power Integrations Patents.

REQUEST FOR PRODUCTION NO. 144:

All documents and things concerning the U.S. PWM market share of any Power Integrations product for which Power Integrations contends to have lost profit or suffered price erosion due to Fairchild's alleged infringement.

REQUEST FOR PRODUCTION NO. 145:

All documents and things concerning the share of the U.S. PWM market held by Power Integrations, Fairchild, or any competitor of Power Integrations or Fairchild.

REQUEST FOR PRODUCTION NO. 146:

All documents and things concerning the share of the PWM market of any country other than the United States held by Power Integrations, Fairchild, or any competitor of Power Integrations or Fairchild.

REQUEST FOR PRODUCTION NO. 147:

All documents and things concerning the share of the worldwide PWM market held by Power Integrations, Fairchild, or any competitor of Power Integrations or Fairchild.

REQUEST FOR PRODUCTION NO. 148:

Documents sufficient to show U.S. revenues from October 20, 1998–October 20, 2004 of

Power Integrations products that Power Integrations contends compete with or are competed with by the Accused Fairchild products.

REQUEST FOR PRODUCTION NO. 149:

Documents sufficient to show non-U.S. revenues from October 20, 1998-October 20, 2004 of Power Integrations products that Power Integrations contends compete with or are competed with by the Accused Fairchild products.

REQUEST FOR PRODUCTION NO. 150:

Documents sufficient to on an annual basis from October 20, 1998-October 20, 2004, sales by country for each Power Integrations PWM product including, but not limited to, the TinySwitch I, TinySwitch II, TOPSwitch, TOPSwitch II, TOPSwitch FX, TOPSwitch GX, LinkSwitch, and DPA-Switch family of products.

REQUEST FOR PRODUCTION NO. 151:

All documents and things used or referred to in any way in responding to Fairchild's interrogatories in this case.

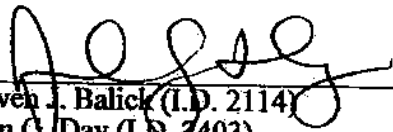
REQUEST FOR PRODUCTION NO. 152:

All documents and things concerning Power Integrations' Patents, intellectual property, this litigation or any Accused Fairchild Products, including, but not limited to, internal communications and communications to or from any third party or governmental entity.

REQUEST FOR PRODUCTION NO. 153:

All documents and things that constitute or relate to any Power Integrations communications with, or that relate to any standards organizations (whether formal, informal, final or non-final), or any member thereof, regarding the Power Integrations Patents, Power Integrations Patented Products, Power Integrations' litigation with Fairchild, or Accused Fairchild Products.

ASHBY & GEDDES


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Wilmington, DE 19899
(302) 654-1888

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1000 Marsh Road
Menlo Park, CA 94025
(650) 614-7400

Dated: January 24, 2005
152660.1

CERTIFICATE OF SERVICE

I hereby certify that on the 24th day of January, 2005, the attached **DEFENDANTS**
FAIRCHILD SEMICONDUCTOR INTERNATIONAL, INC. AND FAIRCHILD
SEMICONDUCTOR CORPORATION'S FIRST SET OF REQUESTS FOR
PRODUCTION was served upon the below-named counsel of record at the address and in the
manner indicated:

William J. Marsden, Jr., Esquire
Fish & Richardson P.C.
919 N. Market Street
Suite 1100
P.O. Box 1114
Wilmington, DE 19899

HAND DELIVERY

Frank E. Scherkenbach, Esquire
Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110-2804

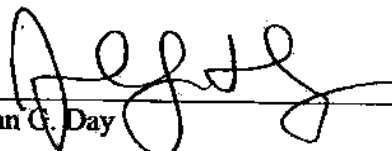
VIA FEDERAL EXPRESS

Michael Kane, Esquire
Fish & Richardson P.C.
60 South Sixth Street
3300 Dain Rauscher Plaza
Minneapolis, MN 55402

VIA FEDERAL EXPRESS

Howard G. Pollack, Esquire
Fish & Richardson P.C.
500 Arguello Street, Suite 500
Redwood City, CA 94063

VIA FEDERAL EXPRESS



John G. Day

EXHIBIT C

REDACTED

EXHIBIT D

REDACTED

EXHIBIT E

AO 88 (Rev. 1/94) Subpoena in a Civil Case

Issued by the
UNITED STATES DISTRICT COURT

DISTRICT OF

MASSACHUSETTS

POWER INTEGRATIONS, INC., a
Delaware corporation,

Plaintiff,

v.

SUBPOENA IN A CIVIL CASE

FAIRCHILD SEMICONDUCTOR
INTERNATIONAL, INC., a Delaware corporation, and
FAIRCHILD SEMICONDUCTOR CORPORATION,
a Delaware corporation,

CASE NUMBER:¹ **C.A. No. 04-1371 JJF**
District of Delaware

Defendants.

TO: Paul Horowitz
Lyman 225
17 Oxford Street
Cambridge, MA 02138

☐ **YOU ARE COMMANDED** to appear in the United States District Court at the place, date, and time specified below to testify in the above case.

PLACE OF TESTIMONY

COURTROOM

DATE AND TIME

☒ **YOU ARE COMMANDED** to appear at the place, date, and time specified below to testify at the taking of a deposition in the above case.

PLACE OF DEPOSITION

Fish & Richardson P.C., 225 Franklin Street, Boston, MA 02110

DATE AND TIME

February 4, 2006; 9:30 a.m.

☒ **YOU ARE COMMANDED** to produce and permit inspection and copying of the following documents or objects at the place, date and time specified below (list documents or objects):
 Please see Attachment A hereto

PLACE

Fish & Richardson P.C., 225 Franklin Street, Boston, MA 02110

DATE AND TIME

February 3, 2006 9:30 a.m.

☐ **YOU ARE COMMANDED** to permit inspection of the following premises at the date and time specified below.

PREMISES

DATE AND TIME

Any organization not a party to this suit that is subpoenaed for the taking of a deposition shall designate one or more officers, directors, or managing agents, or other persons who consent to testify on its behalf, and may set forth, for each person designated, the matters on which the person will testify. Federal Rules of Civil Procedure, 30(b)(6).

ISSUING OFFICER'S SIGNATURE AND TITLE (INDICATE IF ATTORNEY FOR PLAINTIFF OR DEFENDANT)

DATE

January 31, 2006

Attorneys for Plaintiff POWER INTEGRATIONS, INC.

ISSUING OFFICER'S NAME, ADDRESS AND PHONE NUMBER

Michael R. Headley, Fish & Richardson P.C., 500 Arguello Street, Suite 500, Redwood City, CA 94063; (650) 839-5070

(See Rule 45, Federal Rules of Civil Procedure, Parts C & D on the next page.)

¹ If action is pending in district other than district of issuance, state district under case number.

AO 88 (Rev. 1/94) Subpoena in a Civil Case

PROOF OF SERVICE

DATE	PLACE
SERVED	
SERVED ON (PRINT NAME)	MANNER OF SERVICE
SERVED BY (PRINT NAME)	TITLE

DECLARATION OF SERVER

I declare under penalty of perjury under the laws of the United States of America that the foregoing information contained in the Proof of Service is true and correct.

Executed on _____

DATE**SIGNATURE OF SERVER****ADDRESS OF SERVER****Rule 45, Federal Rules of Civil Procedure, Parts C & D:****(c) PROTECTION OF PERSONS SUBJECT TO SUBPOENAS.**

(1) A party or an attorney responsible for the issuance and service of a subpoena shall take reasonable steps to avoid imposing undue burden or expense on a person subject to that subpoena. The court on behalf of which the subpoena was issued shall enforce this duty and impose upon the party or attorney in breach of this duty an appropriate sanction, which may include, but is not limited to, lost earnings and reasonable attorney's fees.

(2) (A) A person commanded to produce and permit inspection and copying of designated books, papers, documents or tangible things, or inspection of premises need not appear in person at the place of production or inspection unless commanded to appear for deposition, hearing or trial.

(B) Subject to paragraph (d)(2) of this rule, a person commanded to produce and permit inspection and copying may, within 14 days after service of the subpoena or before the time specified for compliance if such time is less than 14 days after service, serve upon the party or attorney designated in the subpoena written objection to inspection or copying of any or all of the designated materials or of the premises. If objection is made, the party serving the subpoena shall not be entitled to inspect and copy materials or inspect the premises except pursuant to an order of the court by which the subpoena was issued. If objection has been made, the party serving the subpoena may, upon notice to the person commanded to produce, move at any time for an order to compel the production. Such an order to compel production shall protect any person who is not a party or an officer of a party from significant expense resulting from the inspection and copying commanded.

(3) (A) On timely motion, the court by which a subpoena was issued shall quash or modify the subpoena if it

- (i) fails to allow reasonable time for compliance;
- (ii) requires a person who is not a party or an officer of a party to travel to a place more than 100 miles from the place where that person resides, is employed or regularly transacts business in

person, except that, subject to the provisions of clause (3)(B)(iii) of this rule, such a person may in order to attend trial be commanded to travel from any such place within the state in which the trial is held, or

- (iii) requires disclosure of privileged or other protected matter and no exception or waiver applies, or
- (iv) subjects a person to undue burden.

(B) If a subpoena

- (i) requires disclosure of a trade secret or other confidential research, development, or commercial information, or
- (ii) requires disclosure of an unretained expert's opinion or information not describing specific events or occurrences in dispute and resulting from the expert's study made not at the request of any party, or

(iii) requires a person who is not a party or an officer of a party to incur substantial expense to travel more than 100 miles to attend trial, the court may, to protect a person subject to or affected by the subpoena, quash or modify the subpoena, or, if the party in whose behalf the subpoena is issued shows a substantial need for the testimony or material that cannot be otherwise met without undue hardship and assures that the person to whom the subpoena is addressed will be reasonably compensated, the court may order appearance or production only upon specified conditions.

(d) DUTIES IN RESPONDING TO SUBPOENA.

(1) A person responding to a subpoena to produce documents shall produce them as they are kept in the usual course of business or shall organize and label them to correspond with the categories in the demand.

(2) When information subject to a subpoena is withheld on a claim that it is privileged or subject to protection as trial preparation materials, the claim shall be made expressly and shall be supported by a description of the nature of the documents, communications, or things not produced that is sufficient to enable the demanding party to contest the claim.

ATTACHMENT A
TO PAUL HOROWITZ SUBPOENA

DEFINITIONS

1. "Horowitz," "you," or "your" means Paul Horowitz.
2. "Power Integrations" mean Power Integrations, Inc., including without limitation all of its corporate locations, and all predecessors, successors, subsidiaries, parents, assigns and affiliates as well as all past or present directors, officers, agents, representatives, employees, consultants, attorneys, and entities acting in joint venture or partnership with Power Integrations.
3. "Fairchild" means Delaware corporations Fairchild Semiconductor Corporation and Fairchild Semiconductor International, Inc., and their wholly-owned subsidiary and Korean corporation Fairchild Semiconductor Korea, including without limitation all of their corporate locations, and all predecessors, successors, assigns and affiliates, and all past or present directors, officers, agents, representatives, employees, consultants, and attorneys.
4. "Document" incorporates the full meaning of Federal Rule of Civil Procedure 34, and includes all tangible things, all originals (or, if originals are not available, identical copies thereof), all non-identical copies of a document, all drafts of final documents, all other written, printed, or recorded matter of any kind, and all other data compilations from which information can be obtained and translated if necessary, that are or have been in your actual or constructive custody, possession, or control, regardless of the medium on which they are produced, reproduced, or stored (including without limitation computer programs and files containing any requested information), and any recording or writing, as these terms are defined in Rule 1001, Federal Rules of Evidence, as well as any electronic documents including electronic mail, voice mail, and text messaging. Any document bearing marks, including without limitation, initials, stamped initials, comments, or notations not a part of the original text or photographic reproduction thereof, is a separate document. Any translation of a document is a separate document.
5. "Refer to," "Referring to," "Relate to," and "Relating to" mean concerning, constituting, pertaining to, mentioning, commenting on, connected with, discussing, describing, identifying, analyzing, explaining, showing, reflecting, dealing with, comprising, consisting of, containing, resulting from, or regarding a particular subject in whole or in part, either directly or indirectly.

DOCUMENTS REQUESTED

1. All documents that refer or relate to Power Integrations, Power Integrations' patents, Power Integrations' products, Fairchild, Fairchild's products, or this litigation.
2. All notes that refer or relate to Power Integrations, Power Integrations' patents, Power Integrations' products, Fairchild, Fairchild's products, or this litigation.
3. All documents that refer or relate to communications between you and Fairchild, including but not limited to communications with Fairchild's attorneys and any e-mail communications.
4. All documents Fairchild or its attorneys have provided to you.
5. All documents you have provided to Fairchild or its attorneys.
6. All documents considered in preparation of your expert reports and declarations in this matter.
7. Invoices or records that refer or relate to your work for Fairchild in this matter, including but not limited to invoices submitted to Fairchild and documents that refer or relate to payments by Fairchild to you.

50326756 (2).doc

EXHIBIT F

REDACTED